SOLAR POND CLEANOUT

PROJECT MANAGEMENT

PLAN

Revision 2

February 12, 1992

EG&G Rocky Flats Plant
Golden, Colorado

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ADMIN RECORD

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1.0 MISSION NEED AND OBJECTIVE

An Agreement-in-Principle (AIP) between the U.S. DOE and State of Colorado was entered into on June 28, 1989. Attachment B of the AIP requires accelerated cleanup of past environmental contamination sites at the Rocky Flats Plant which pose higher risk for spread of contaminants into surface water, ground water and the soil. The solar evaporator ponds are identified as a past storage and treatment site requiring accelerated cleanup. The Agreement mandates the removal of all water and sludge from the pond, treatment of the water, solidification and stabilization of the sludge, and shipment of all solidified sludge (pondcrete) to the Nevada Test Site (NTS). Loss of interim RCRA status on November 8, 1992 and the IAG requirement for Remedial Field Investigation and the subsequent draft RFI/RI report to be submitted on May 2, 1993 are the major drivers for this project.

The overall purpose of this project is to implement pre-remediation actions defined in the Agreement in Principle (AIP) between the DOE and State of Colorado. The AIP stipulates that DOE will stem the further migration of harmful contaminants into the soil and ground water by expediting the cleanup of five solar evaporation ponds. Accelerated cleanup involves removal and treatment of all pond water, removal and treatment of pond sludge and shipment of the solidified/stabilized sludge for disposal.

This pre-remediation action involves the capabilities and participation of many functional organizations at the Rocky Flats Plant. Additionally, this effort will require the acquisition of technology and services currently not available on plantsite. A program management approach is required to schedule, coordinate, and manage the resources and development, engineering, construction, and operational phases of the project.

The principal objective of this plan is to provide a treated product which is in demonstrated full compliance with the requirements of DOT regulations and the expected recipient, NTS. Procedures will reflect a total integration of effort by EG&G and H-NUS and incorporate best engineering practices for protecting the environment and the workers. Waste Minimization is also specified.

1.1 Measurable Objectives of Project

The significant measurable objectives of the solar pond cleanout project are summarized as follows:

1. All pond water will be removed, treated, and reused to the extent possible in the plant raw water systems.

2. All pond sludge will be removed, solidified with cement, and packaged for offsite disposal.

3. The current inventory of unacceptable pondcrete waste will be recertified or resolidified with cement and packaged for offsite disposal.

4. Runoff and ground water collected in the Interceptor Trench French Drain System will be temporarily contained for treatment and utilization in the plant raw water system.

5. The solar ponds will be protected to prevent further accumulation of water and sediment.

6. All solidified pondcrete will be shipped to NTS for disposal.

7. All actions necessary to meet these objectives will be performed in full compliance with all corporate policies; and DOE, State and Federal environmental and transportation regulations.

1.2 Waste Minimization

Two major thrusts of the project waste minimization are volume minimization of processed waste and equipment protective initiatives to protect equipment from contamination and minimize the quantity of equipment exposed to the waste material. The principal mechanism for volume minimization is water removal from the pond sludge and the existing pondcrete/saltcrete. A low water ratio has been specified to implement this thrust.

2.0 TECHNICAL PLAN

This project plan defines the major issues and technical constraints for solar pond cleanout and pondcrete resolidification, describes the activities and schedules necessary to achieve the overall objectives, and summarizes the team organization and management guidelines necessary to comply with accelerated cleanup of the solar evaporation ponds.

The project plan is a working document and will be revised as the needs and resources of the project dictate. This plan is not intended to modify contract provisions or existing policies/procedures in any way.

2.1 Summary of Major Issues and Technical Constraints

Major issues for resolution that will impact the completion date for solar pond cleanout are:

1. Water management.
2. Sludge management.
3. Regulatory Agency concurrence.
4. Operational systems requirements.
5. NTS disposal site availability.

Each of these major issues and technical constraints are addressed in this project plan. Specific, coordinated, technical approaches are planned for resolving these issues and meeting the objectives of the project.

2.2 Description of Project Phases

The solar pond cleanout project involves accomplishing significant elements of work within a very compressed time schedule. Work breakdown structures have been developed to show the significant tasks and activities that must be completed to satisfy the major issues/technical constraints and permit cleanout of the solar ponds and shipment of all solidified Pondcrete to NTS by November 8, 1992. These work breakdown structures are product oriented and present the elements of work down to level three. The work breakdown structures are attached as Figures 1 through 5.

A logic and flow diagram which illustrates the interdependent relationships of the major project work elements is attached as Figure 6. This flow diagram permits a determination of the non-critical/critical work activities and contains the critical path of the project which must be driven to completion under a very tight schedule.

2.2.1 Enhanced Solar Evaporation of Pond Water

Total capacity of the solar evaporation ponds is about 11,300,000 gallons of water. Based on current levels, an estimated 4,000,000 gallons of water must be removed and treated.

An integrated water balance has been tabulated for the solar evaporation ponds which considers precipitation and interceptor trench pump house (ITPH) inflows, and evaporative outflows. The results indicate that the 207B ponds will be subject to a net liquid accumulation (due to the ITPH inflow) of approximately 2 million gallons while the 207A Pond will experience a net loss of approximately 3 million gallons. Each year the overall pond system will lose approximately one million gallons of liquid by solar evaporation.

Monthly precipitation rates correspond to data gathered by the National Oceanic and Atmospheric Administration (NOAA) for the Denver area. Inflow from the ITPH has been estimated in previous investigations to be approximately 4 million gallons per year. Evaporation rates are estimated from pan evaporation data collected between 1959 and 1977 at Cherry Creek Reservoir.

Therefore, increasing the natural evaporation rate of solar pond water is desirable and will be accomplished by the following actions:

1. Dyeing the water dark blue to reduce reflective heat loss. (Complete.)

2. Installing heater/soaker pipes to wet pond perimeter areas, thus increasing surface area exposure. (Operational March 1, 1992.)

3. Direct heating of the solar pond water; this measure will only be employed if forced evaporation measures fail to operate.

Brief technical justification, equipment descriptions and installation locations are summarized for the following activities.

Dyeing the Water Dark Blue

Use of a dye is an industry accepted practice for enhancing the evaporation rate of solar ponds. Approximately two 55-gallon drums of dye will be added to two of the three 207B series ponds. No dye will be added to Ponds 207C and 207A. Pond 207C has a high total of dissolved solids content and the solution is highly basic. Enhancements to solar evaporation are not considered feasible under these circumstances. Blue lace dye is not a RCRA regulated material. Most of the benefit will result from a decrease in reflected heat loss by allowing the dark blue water to absorb additional solar radiation.

Pond 207A will not have dye added in that the level has significantly receded and thus the surface area exposed to solar evaporation decreased.

Heater Soaker Pipes to Wet Pond Perimeter Areas

Another technique for enhancing evaporation is the use of a soaker pipe which runs along the top perimeter of pond 207A and each of the 207B series ponds. Water will flow through the pipe and exit through small diameter holes to keep the pond perimeter asphalt wetted.

Prior to entering the soaker pipe, the pond water will be transported through a heater pipe to raise the water temperature about 40 degree F above the bulk, ambient temperature. Heating will be accomplished by passing the water through a natural gas volume water heater. Heat trace will be used for temperature maintenance of the water from the heater to the discharge point. Increasing both water temperature and surface area-to-volume ratio will substantially enhance the evaporation rate.

2.2.2 Forced Evaporation of Pond Water

Mechanical thermal forced evaporation systems, which consist of a vapor compression unit, in series with a four-stage flash evaporator will be used for this phase of the project. Three identical systems, connected in parallel, will be acquired and installed in Building 910. These evaporation units will utilize the existing feed, distillate, and concentrate handling equipment in the building. A diagram of the complete operating system is attached in Figure 7.

The processing plan will be to pump the water from Pond 207A and Pond 207B North, Center and South through piping via a double-pipe transfer line which connects to a combined feed tank located inside the building. The feed tank will be capable of supplying the feed with low dissolved solids to the vapor compression unit and supplying the brine recycled from the vapor compression unit to the feed inlet of the flash evaporator. The distillate will be collected from the vapor compression unit and the flash evaporator into two separate small surge tanks. The distillate then will be combined into one discharge

stream through a flow totalizer and pumped into a 7,000 gallon capacity holding tank. Continuous circulation of the distillate will be performed at the holding tank to ensure adequate mixing until a high level volume setpoint is reached. The distillate will then be analyzed for gross alpha, gross beta, pH, conductivity and nitrates. Upon the verification of satisfactory analytical results, the distillate will then be transferred to a 500,000 gallon capacity holding tank. From there, the distillate will be injected into the raw water system. Distillate that does not meet the allowable limit will be returned to the feed tank for recycling. The concentrated brine from the flash evaporator will be cemented in the pondcrete or saltcrete process. Prior to production start-up of this process, a complete analytical characterization of the distillate and concentrated brine will be performed.

2.2.3 Temporary Water Containment Measures

The emptied ponds will be protected from further accumulation by water and sediment by interim protective measures. These measures will be in place from the period of approximately 1991 until 1994, when final closure actions should be underway. Water from the Interceptor French Drain Collection System will be pumped to three temporary modular surge tanks. The tanks will have a combined volume capacity of 1,500,000 gallons to handle the expected inflow during the peak precipitation months. The collected water will be treated by three flash evaporators installed in Building 910, and reused in the plant raw water systems.

Interim protective measures will also be employed to prevent resuspension of dry pond-bottom materials, unnecessary erosion or sloughing of sidewalls, and infiltration or additional leaching of contaminants through the soil due to accumulation of rainwater and snowmelt. Specific measures to be used will be identified as the solar ponds are cleaned out. These measures will be implemented to ensure that residual contaminants can be safety contained within the pond perimeters. The planned solidification process will remove all sludge prior to completely drying the ponds. The heater/soaker pipes will be used to enhance solar evaporation of any incidental precipitation.

The cementing contractor (refer to Section 2.2.4) will provide a plan to remove the sludge from the ponds and to wash the pond liners to the point when the surface is "free" of obvious visible contamination. Procurement, installation and operation of the temporary modular tanks for collecting water from the Interceptor Trench French Drain System will be performed by EG&G.

2.2.4 Solidification of Solar Pond Sludge

Technology necessary to satisfactorily solidify solar pond sludge under the compressed time constraints, is not available on site. This technology will be acquired from Halliburton -NUS (H-NUS) who has been selected by competitive procurement process to be the cementing contractor. The contracting strategy is to have H-NUS provide all plans, procedures and all equipment installed in a cost plus fixed fee (CPFF) contract (Phase I) with two subsequent fixed fee contracts for processing pond sludge Phase II and existing pondcrete/saltcrete billets (Phase III). The contractor will provide all

necessary materials, equipment, and services to characterize the sludge, and develop a cost-effective cementing process which will produce a solidified waste form acceptable for transportation and land disposal at NTS. H-NUS has been contracted to have specific tasks done which will provide the necessary foundation to provide assurance that the end product will meet the above attributes. The details of the tasks are contained in the H-NUS Project Plan for Rocky Flats Solar Ponds/Pondcrete Stabilization Project, which together with the statement of work provide the technical requirements of the contract for execution by H-NUS. The Quality Assurance Requirements as specified by the Site Quality Assurance manual have been implemented in the Solar Pond Project Management Plan. This provides the implementation of NQA-1 and DOE-RFO Order 5700.6B requirements.

The following are brief summaries of the tasks to be accomplished by H-NUS. Review and/or approval of these actions will occur at the appropriate level of management within EG&G, RFO, and DOE HQ.

Pond Sludge Analysis and Characterization

This task consists of sampling, packaging, shipping, and laboratory analysis of samples of pond sludge and pond water. The sampling and analysis plan will be statistically derived and is intended to characterize the pond sludge. Sludge samples will be obtained from quadrants in each of the five ponds; and a water sample will be taken from Pond 207C. The parameters for analysis include volatile organic compounds, non-volatile organics, inorganics, metals, and radionuclides. Sampling and analysis of the sludge and water will follow standard protocol as defined by EPA SW-846. All detection limits will be sensitive enough to meet the required detection limits of SW-846. The results of this effort will be used to assist in the development of a process formula for cementing the solar pond sludge and provide a technical basis for developing an acceptable sampling plan to ensure that the pondcrete meets NTS and LDR acceptance criteria. The analytical data will also provide a technical basis to assess potential worker exposure during processing.

Development of Cementing Process Parameters

This phase of the project will be accomplished by the cementing contractor. The development process will involve limited sampling and analysis to confirm prior analytical results, development of a cementing formulation that addresses the worst case chemistry conditions, and testing of this formulation with surrogate wastes and pond sludge to ensure that specific TCLP and compressive strength requirements can be achieved. Once the formula is developed, the formula will be used to produce samples of actual solidified waste for testing, including TCLP testing, ASTM test for solid versus liquid, compressive strength, other testing as deemed necessary to verify the process. The intent of this development work is to produce a process formula which will successfully solidify the worst case chemistry conditions of the sludge and produce the least volumes of waste.

Homogenization of Pond Sludge

The advantages and disadvantages of homogenization of pond sludge will be evaluated during the characterization and treatability studies of the pond sludge. Ponds 207B North, Central, and South are expected to contain approximately 2250 cubic yards of aqueous sludge/sediment which is classified as a low level mixed waste. The sludge is currently presumed to be evenly distributed in the three ponds. Pond 207C is estimated to contain about 750 cubic yards of sludge, sediment, and saturated salts. Sludge has been removed from Pond 207A and it is expected that this pond contains only small amounts of sediment originating from wind deposition and overflow water from the 207B series ponds.

If evaluated as a beneficial reduction of technical risk, this phase of the project would involve accomplishing two significant tasks:

1) Homogenization of the sludge, sediment, salts, and water (no dewatering is planned for this pond) in Pond 207C, and
2) Consolidation/homogenization of the sludge in the three 207B series.

The concept is to consolidate the sludge from the three 207B series ponds into one pond and mix the 207C pond individually. This action could provide a technical risk reduction assuring that the cementing process has a relatively homogeneous input which will minimize the impact on the process formula.

High Capacity, Continuous Cementing Process

This technology, equipment, services, automated process controls, and analytical capabilities for solidifying the solar pond sludge will be provided by H-NUS.

H-NUS will also provide a licensed onsite laboratory facility and continuous in-line real time monitoring of the cementing process, controlling parameters of both raw and mixed products, to ensure a uniform, high quality product waste form with documentation of key parameters.

The proposed process will not require new or major construction. The new process will replace existing screening and pumping equipment with better-technology units. The process will also replace the conventional cement mixers with digital-process-controlled, state of the art mixing systems. This straight-forward substitution of newer-technology units will allow performance to our committed deadlines. Pond sludge will still be solidified with portland cement. This process is planned to be installed within a HEPA filtered enclosure on the 750 pad.

The equipment footprint, and environmental effects of both the existing pondcrete remix process and the proposed process are the same. To ensure that the process as designed will work within the physical footprint, health and safety concerns and with due consideration of total resources required, a material handling feasibility study has been specified within the contract with H-NUS.

2.2.5 Pondcrete/Saltcrete Recertification

During sampling and inspection there were no containers found which met the basic criteria of solid and stable. Thus all existing pondcrete/saltcrete must be resolidified to meet waste acceptance criteria.

2.2.6 Resolidification of Existing Pondcrete and Saltcrete

Pondcrete/Saltcrete will be reprocessed to an acceptable cemented waste form by H-NUS. The recementing operation will be integrated into the high capacity continuous process similar to that for cementing the solar pond sludge. The resolidification process will be installed on the 904 pad.

Analysis and Characterization of Current Pondcrete/Saltcrete Inventory

This task consists of sampling the pondcrete/saltcrete for two basic purposes. The first purpose is to determine the chemical and physical nature (characterization) of the existing billets for selecting the best recementing formulation. The second purpose is to establish the physical population distribution to design reprocessing equipment. A statistical sampling plan has been prepared and sampling and analysis will follow standard protocol as defined by EPA SW-846.

Development of Cementing Process Parameters

This task will involve development of a process formula for recementing. Development will be aimed at producing the minimum waste volume that ensures the resolidified pondcrete/saltcrete meets all DOT, EPA and NTS acceptance criteria. The development and testing plan will be developed by the subcontractor and approved by EG&G.

2.2.7 Regulatory Agency Concurrence

Pondcrete/saltcrete operations are RCRA interim status units, and the solar evaporation ponds are undergoing RCRA closure. Therefore, approved changes to the current Part A interim status are required in order to meet the project objective. Two techniques (a blue dye, and soaking of pond perimeter areas) are being pursued to enhance solar evaporation of the pond water. Forced evaporation will be achieved through the use of portable evaporator units. All water management techniques will require CDH approval. An approved change to the current Part A interim status will also be required for the new subcontracted pondcrete remixing process, the new high capacity, continuous cementing process for the sludge and the interim protective measures for the emptied ponds.

All required changes to interim status have been identified in the planning process. Technical justifications, and the required engineering documentation to support each action will be prepared and submitted to CDH for approval.

A required Environmental Assessment (EA) for the water management activities, sludge management activities, and transportation of the solidified waste to NTS was prepared and submitted to DOE on February 13, 1991. A Finding of No Significant Impact (FONSI) has been approved.

Electric generators will be used to power portable evaporator units; this equipment burns natural gas. An Air Pollutant Emission Notice (APEN) has been submitted to DOE/RFO on May 9, 1991, for submittal to CDH. All other pieces of equipment will be reviewed in the design process for possible air regulation and the required permits submitted.

Two shelters are associated with the 904 pad (#10 and #11) and two shelters are associated with the 750 pad (#5 and #6). APENs and permit applications have been submitted to the Colorado Department of Health for these shelters and those permits are pending. CDH is expected to issue one permit for all pondcrete shelters for remixing operations.

A change in plant operations that will result in an increase in the rate of radionuclide emissions is a modification (no matter how small that increase is) according to EPA's 40 CFR 61.15. However, if the estimated maximum individual dose added by the new construction or modification is less than 1% of the standard, then the modification or new construction does not need prior approval. It is expected that solar pond cleanout will cause no additional surface disturbance; therefore, water analysis will provide the data needed to calculate dose. An analysis will be done to address the EPA NESHAP new permit issue as soon as the required radionuclide isotopic concentrations are known.

2.2.8 Operational Systems Requirements

The cementing contractor's capabilities and the current waste operations requirements and activities will be integrated during Phase I of the contract, and prior to quantity production. Integration would require a dedicated, concerted effort between operations and contractor personnel. The success of the project would depend on satisfactorily addressing each of the key operational requirements and developing procedures and systems to operate and control the production processes. The work breakdown structure identifies the major work activities associated with documentation and operations. Essential documentation requirements are summarized as follows:

Material Handling Plan

Meeting the scheduled commitments will require high quantity pondcrete production rates. Material handling to support these rates is a major concern. A material handling plan must be developed which addresses at a minimum the following concerns.

1. Providing sufficient raw material (cement, additives, water) to the mixing operation.

2. Acquiring, storing and preparing the half crates for pondcrete cementing.

3. Movement, handling, curing, inspection, and sampling of filled half crates.

4. Preparing and loading acceptable pondcrete into trucks for shipment to NTS.

5. Ensuring that the physical and permitted "footprint" represent an achievable design and production rate.

6. Providing sufficient protection for worker health and safety.

This plan must consider more than one production option. Solidification rates will be driven by the material handling constraints. Development of a comprehensive material handling plan may very well be the most important phase of this project. A material handling plan will be developed jointly with the subcontractor as part of Phase I of the contract.

Quality Assurance Plan

The current quality control sampling procedure for the pondcrete remixing operation, which requires penetrometer measurements on five surfaces of the solidified pondcrete waste form, is unacceptable for meeting accelerated cleanup objectives. Casting of the pondcrete directly into half crates must be accomplished in a manner which permits certification of the waste for transportation to NTS and Land Disposal.

A Quality Assurance plan based on process control of the cementing process, correlation of process parameters with pondcrete performance, pre-production runs and detailed sampling to qualify the process, and statistical sampling of production quantity lots is planned. A Quality Assurance Plan, which addresses all elements of NQA-1 and DOE/RFO Order 5700.6B are to be developed by the subcontractor and approved by EG&G. This will be accomplished during Phase I of the contract.

Waste Analysis and Sampling Plan

This plan provides the basis for characterizing the physical properties, and chemical and hazardous constituents in the solar pond sludge and reject pondcrete inventory. The analytical information provides the foundation for the development of cementing process parameters to ensure that the pondcrete/saltcrete meets all required disposal criteria. The information also provides the basis for developing a sampling plan for verifying that the waste forms meet disposal criteria.

Sampling plans to characterize the pond sludge and pondcrete/saltcrete for cementing are already developed and sampling is in process. The sampling plan to ensure compliance with disposal criteria will be finalized when the characterization sampling and analysis has been completed. This plan requires approval by EG&G and will be in place prior to quantity solidification operations.

Process Control Plan

The subcontractor will develop a Process Control Plan during Phase I of the contract. This plan will cover as a minimum the controls for the following areas:

1. Waste treatability studies necessary to develop the cementing process formulas.

2. Design of processing equipment.

3. Configuration of the installed equipment, any field changes and repairs.

4. Operating parameters necessary to maintain the process within the operating envelope.

5. Procedures, drawings, checklists, tests, analysis and reports required for waste product certification.

6. Measuring and calibration equipment necessary to control the cementing process.

Records Management

All project plans, records, documents, or specifications which affect the quality of procurement, design, installation, operation, and decommissioning of equipment and/or facilities will meet the requirements established in QR-17 of the EG&G Rocky Flats Quality Assurance Manual. These records will be controlled in accordance with the quality levels established in the Project Quality Assurance Plan. Program Management will develop a records management system to control the generation, handling, and storage of all quality assurance records. Procedures will be implemented in accordance with the guidelines contained in the Rocky Flats Plant Records Management Manual.

2.2.9 Shipping and Disposal of Pondcrete

Shipping and disposal of pondcrete depends on the availability of the NTS and verifiable assurance that the waste form meets all applicable transportation and disposal criteria. The major elements that must be satisfied to ship pondcrete/saltcrete are identified in the work breakdown structure. The project plan provides for ensuring disposal criteria are met. A separate waste disposal application will be submitted to NTS with all supporting documentation as it is developed in the joint H-NUS/EG&G effort.

3.0 ASSESSMENT OF PROJECT RISKS

The most significant project risks have been assessed to the extent possible at this stage of the project. This risk assessment considered schedule, cost, regulatory issues, NTS Disposal Site availability, and technical activities. The major project phases which pose

the most significant risk are transportation of all solidified and resolidified material to NTS, and installation of the interim protective measures for the emptied ponds. Completion of both activities are totally dependent on the water management and sludge management activities remaining on schedule. As the project proceeds, additional risks may become more evident. The results of this risk assessment are attached as Figure 8.

4.0 MANAGEMENT APPROACH

4.1 Organizational Responsibilities

The major technical, regulatory, and production phases of work for the project are identified in the work breakdown structures attached to the technical plan. Work breakdown structure, summarizing the major organizational responsibilities, are attached as Figure 9. Responsibilities for accomplishing the work are summarized for each functional organization.

4.1.1 Program Management

Program Management is responsible for preparing the project plan, coordinating schedules, negotiating and controlling resources, and directing the overall activities and project phases necessary for successful completion of the plan. Program Management will also control, track and report project cost and status, maintain and control all project quality assurance records, and serve as the liaison with upper management, DOE, and other organizations.

4.1.2 Waste Operations

Waste Operations is responsible for staffing, training, and operating the processing equipment and systems necessary for completing the water management actions identified in this project plan. They will provide direction, and management oversight to all matrixed and contracted services. Operations will also be responsible for waste handling, waste packaging, and waste loading in support of the subcontractor's cementing process, and ensuring that operations are done in compliance with all applicable DOE, State and Federal regulations.

4.1.3 Facilities Project Management (FPM)/Facilities Engineering (FE)

FE will be responsible for providing design packages to cover all equipment, procurement, and installation. These packages will include necessary instrumentation controls, and supporting utilities. They will provide systems operational testing requirements for the production equipment and as-built drawings upon completion of SO testing.

FPM will coordinate all activities associated with design, procurement, construction, testing, and plant-contractor interface requirements to ensure the project is completed within budget and on schedule.

4.1.4 Waste Technology

Waste technology is responsible providing technical assistance to waste operations and project management as required, preparing project plans, procedures and documentation as required, and assisting with systems operational testing to support waste production operations.

4.1.5 Traffic

Traffic will approve and specify all administrative controls for shipment of solidified pondcrete to NTS. This organization will provide oversight for ensuring that Waste Operations has properly marked, labeled, and packaged all waste packages. They are also responsible for preparing all shipping documents, the transportation arrangements, and the notifications to NTS.

4.1.6 Waste Quality Engineering

Waste Quality Engineering will be responsible for verifying that the solidified pondcrete meets DOT Transportation requirements, NTS Waste Acceptance Criteria and applicable LDR requirements. This organization will also be responsible for concurrence of the waste quality assurance plan, and waste inspection procedures that meet the needs of the schedule. Waste Inspection will perform all waste inspections required for certification.

4.1.7 Health and Safety

Health and Safety will provide the necessary radiation protection guidelines, industrial hygiene guidelines, and personnel monitoring support to operate all phases of this project. They will be required to identify and provide recommendations for correcting all issues related to personnel protection and equipment safety.

4.1.8 Permitting and Compliance

Permitting and Compliance will prepare and submit the required documentation for all changes to RCRA Interim Status. They will be the principal liaison between the project, DOE, and CDH concerning RCRA permitting issues. Permitting and Compliance will also perform unscheduled inspections of waste treatment, handling, storage, and shipping operations to ensure regulatory compliance.

4.1.9 Engineered Systems and Technical Support

Waste Process Engineering will provide lead project engineering support as required. Lead project engineers will represent the needs of operations and coordinate the many engineering, design, construction, startup, and maintenance phases of the project.

4.1.10 Maintenance/J.A. Jones

These organizations will be responsible for all equipment installation, repair, modification, and replacement. Maintenance also is responsible for gluing, nailing, bonding and stenciling of the half crates.

4.1.11 Purchasing

Purchasing will negotiate and award all contracts for equipment, supplies, services, and technical support for the project.

4.2 Baseline Management and Control

Program Management will control the project to the schedule and cost baselines established in this project management plan and any supporting documents required by the plan. Schedule status, costs and key issues/problems will be reported monthly. Changes to the project baseline will be identified and approved by the DOE project manager prior to implementation.

4.3 Project Team Organization

A project team is chartered with the responsibility to complete the solar pond cleanup project on schedule and within the allocated budgets. The project team will be directed by D.R. Ferrier, the Solar Ponds Cleanout Program Manager. In his absence, the team will be directed by R. W. Boyle, Deputy Program Manager.

Figure 10 provides an organizational chart. When team members change, a revised chart will be provided by the Solar Ponds Cleanout Program Manager.

Support of the Solar Pond Cleanup Project Team will be among the highest priorities for all Team members. These members will be obligated to provide the necessary support to complete the project on schedule.

It is recognized that the Project Team members have additional job responsibilities within their functional groups. However, these additional responsibilities will not impact the successful completion of this project plan nor prevent other functional groups from meeting their milestones as defined by the schedule. If a conflict occurs as to job priority, each Team member is asked to contact D.R. Ferrier to help resolve priorities with their management.

Lead project engineers will coordinate all day-to-day activities, map strategies and establish priorities for maintaining the schedule. They will assist project management in controlling the project.

Specific team members may be requested to attend daily meetings at a location to be designated. This meeting will be a coordination and status meeting to agree upon work strategy for the day. As the project progresses, the meeting frequency may be adjusted. Any Team member may call for additional personnel to resolve problems as they occur. Meetings can be arranged by contacting D.R. Ferrier.

Program Management Team

A Program Management Team is established as a core management group to review progress and address problems encountered by the Project Team. The Management Team will consist of the following members:

Program Manager
D.R. Ferrier

Waste Operations
J. D. Roberts

Process Engineering
L. A. Collins

FPM
D. S. Erickson

FE
G. A. Pickerel

Waste Quality Assurance
T. M. Prochazka

Health and Safety
R. W. Norton

Environmental and Waste Programs
E.F. Lombardi
Lou Eng

Purchasing
S. Heiman

Changes or revisions to this Plan will be agreed to, published, and distributed through the Management Team. It will be the responsibility of each Team member to notify the

Program Manager of any update or revision necessary for their respective organization. This Team will meet as required at a time and place designated. D.R. Ferrier will chair this meeting.

5.0 ACQUISITION STRATEGY

An acquisition plan has been executed for evaluation, selection, and procurement of a contractor to furnish a high capacity continuous cementing process. A cost-plus fixed fee contract has been awarded to Halliburton-NUS with follow-on fixed price contracts for the actual processing of the pond sludge and the existing blocks of pondcrete/saltcrete.

6.0 PROJECT SCHEDULE

Figures 11, 12, and 13 (attached) present the schedule for water management activities, sludge management activities, and regulatory activities respectively. The schedule is consistent with the major project phases described in the plan and identifies milestones with which progress of the project can be measured. Key milestones are summarized in Figure 14. Logic relationships of non-critical/critical activities have been identified in the planning and scheduling process.

7.0 RESOURCE PLAN

A resource chart, consistent with the work breakdown structure in the technical plan is attached as Figure 15. All dollar costs for equipment, identified under water and sludge management are expense money. Costs are presented for FY91, FY92, and FY93. The total calculated ROM cost, including labor, for the project, is $117,694,000.

8.0 APPROVALS AND CONCURRENCE

Prepared by: _____
D. R. Ferrier, Program Manager

Submitted by: _____ 2/20/92
R. V. Morgan, Director, Waste Operations

Approved by: _____ 2/20/92
J. M. Kersh, Associate General Manager
Environmental and Waste Management

9.0 ATTACHMENTS

Attachments to the project plan are identified as follows:

2.0 Technical Plan

Figure 1 Work Breakdown Structure for Water Management
Figure 2 Work Breakdown Structure for Sludge Management
Figure 3 Work Breakdown Structure for Regulatory Concurrence
Figure 4 Work Breakdown Structure for Operational Systems Requirements
Figure 5 Work Breakdown Structure for Pondcrete Shipping
Figure 6 Logic/Flow Diagram for Project Phases
Figure 7 System Diagram for Forced Evaporation of Pond Water

3.0 Assessment of Project Risks

Figure 8 Summary of Project Risks

4.0 Management Approach

Figure 9 Work Breakdown Structure for Functional Organizational Responsibilities
Figure10 Program Team Organizational Chart

6.0 Project Schedule

Figure 11 Project Schedule for Water Management Activities
Figure 12 Project Schedule for Sludge Management Activities
Figure 13 Project Schedule for Regulatory Activities
Figure 14 Summary of Project Key Milestones

7.0 Resource Plan

Figure 15 Resource Chart

Figure 1

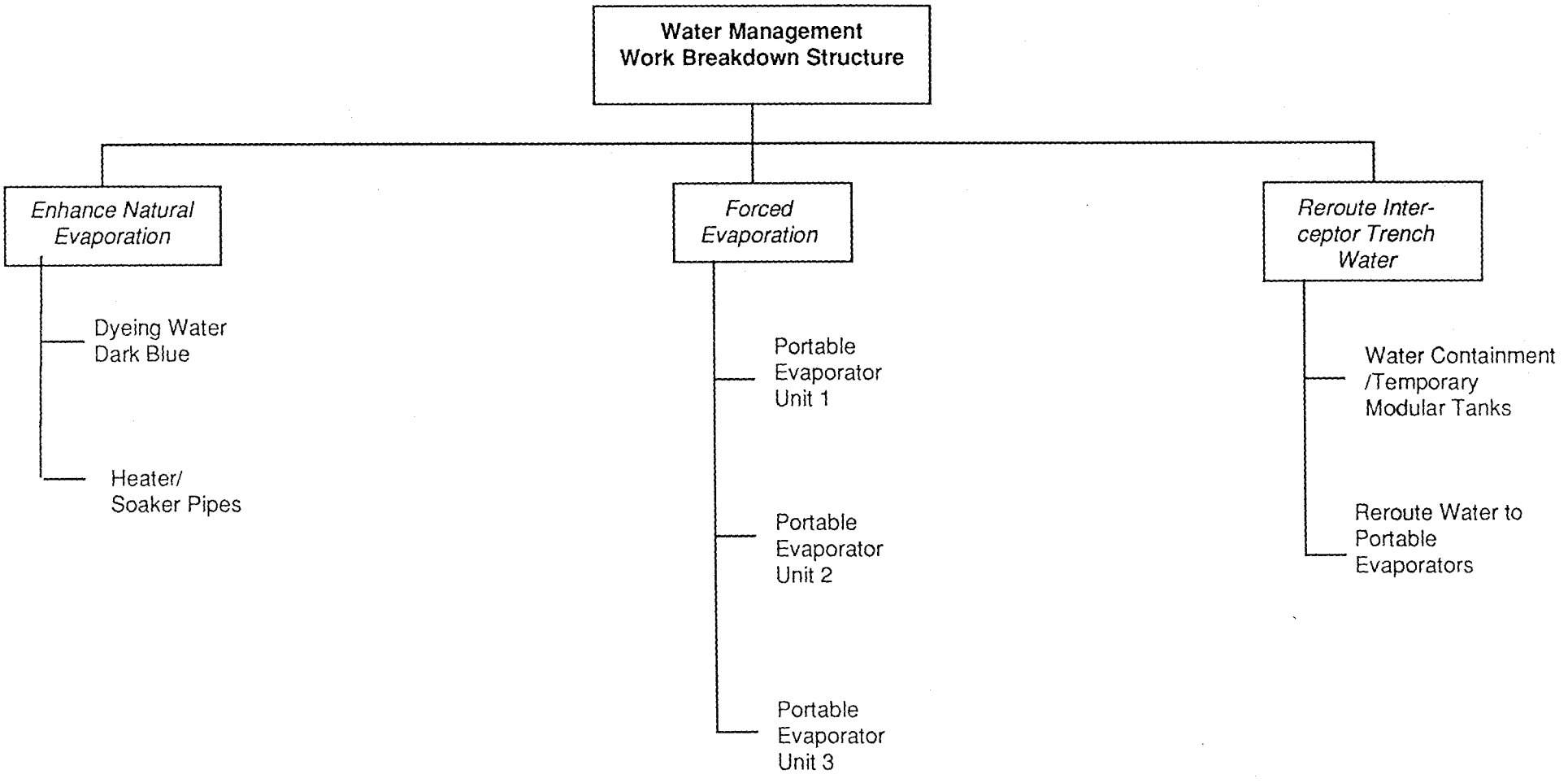

Water Management
Work Breakdown Structure
Enhance Natural Evaporation
Dyeing Water Dark Blue
Heater/ Soaker Pipes
Forced Evaporation
Portable Evaporator Unit 1
Portable Evaporator Unit 2
Portable Evaporator Unit 3
Reroute Inter-ceptor Trench Water
Water Containment /Temporary Modular Tanks
Reroute Water to Portable Evaporators

Figure 2

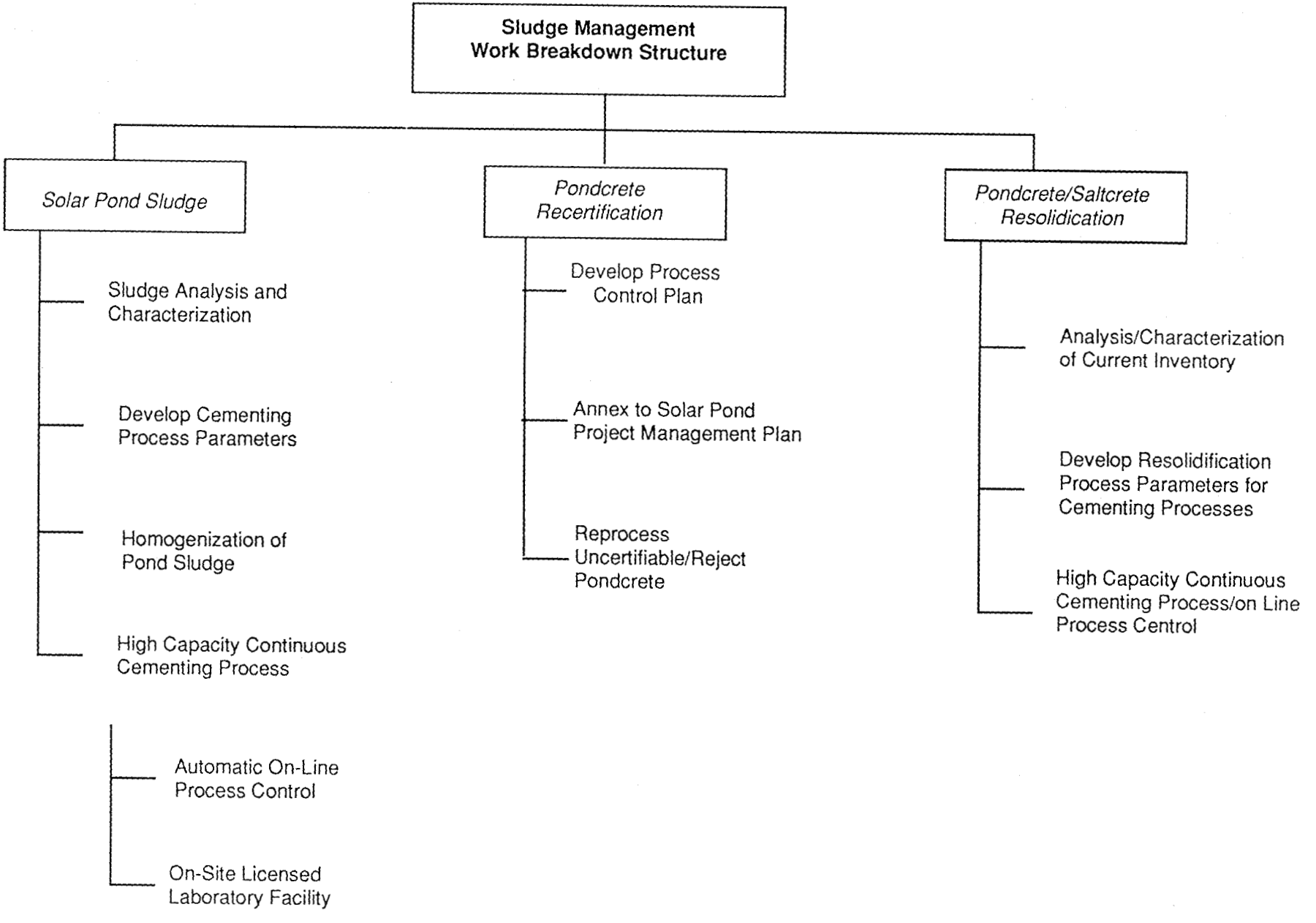

Sludge Management
Work Breakdown Structure
Solar Pond Sludge
Sludge Analysis and Characterization
Develop Cementing Process Parameters
Homogenization of Pond Sludge
High Capacity Continuous Cementing Process
Automatic On-Line Process Control
On-Site Licensed Laboratory Facility
Pondcrete Recertification
Develop Process Control Plan
Annex to Solar Pond Project Management Plan
Reprocess Uncertifiable/Reject Pondcrete
Pondcrete/Saltcrete Resolidication
Analysis/Characterization of Current Inventory
Develop Resolidification Process Parameters for Cementing Processes
High Capacity Continuous Cementing Process/on Line Process Control

Figure 3

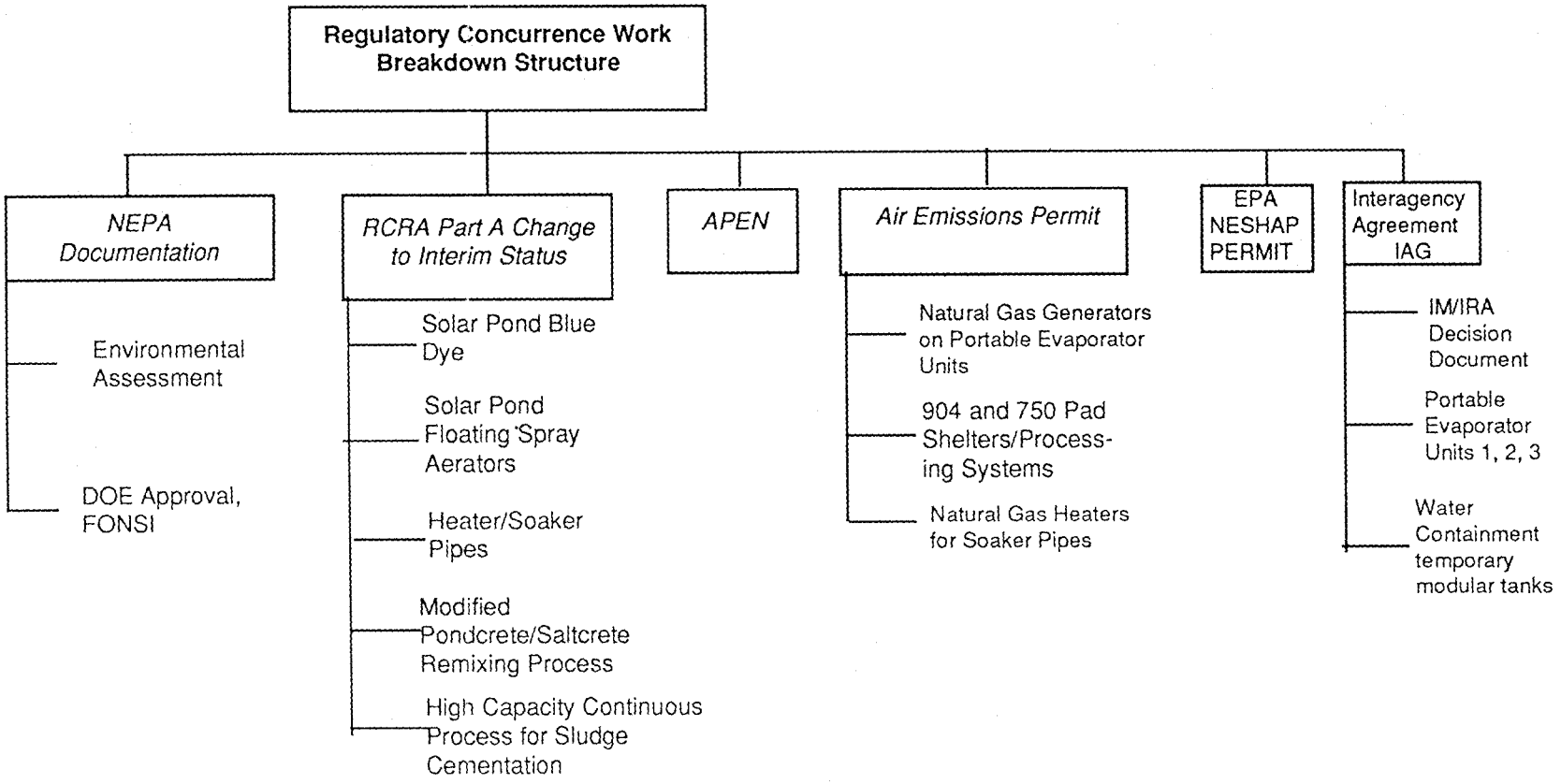

Regulatory Concurrence Work Breakdown Structure
NEPA Documentation
Environmental Assessment
DOE Approval, FONSI
RCRA Part A Change to Interim Status
Solar Pond Blue Dye
Solar Pond Floating Spray Aerators
Heater/Soaker Pipes
Modified Pondcrete/Saltcrete Remixing Process
High Capacity Continuous Process for Sludge Cementation
APEN
Air Emissions Permit
Natural Gas Generators on Portable Evaporator Units
904 and 750 Pad Shelters/Processing Systems
Natural Gas Heaters for Soaker Pipes
EPA NESHAP PERMIT
Interagency Agreement IAG
IM/IRA Decision Document
Portable Evaporator Units 1, 2, 3
Water Containment temporary modular tanks

Figure 4

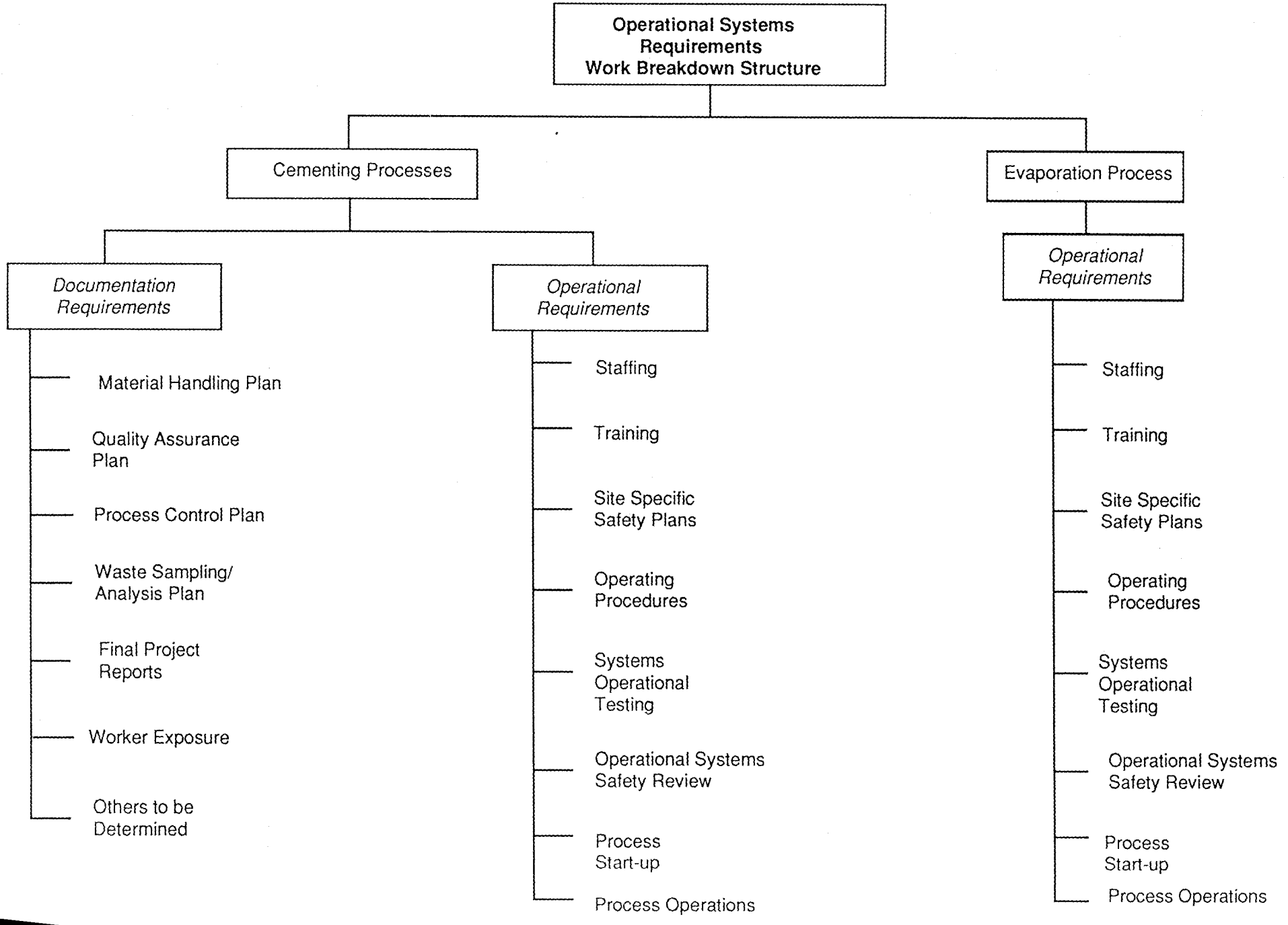

Operational Systems Requirements Work Breakdown Structure
Cementing Processes
Evaporation Process
Documentation Requirements
Operational Requirements
Operational Requirements
Material Handling Plan
Quality Assurance Plan
Process Control Plan
Waste Sampling/ Analysis Plan
Final Project Reports
Worker Exposure
Others to be Determined
Staffing
Training
Site Specific Safety Plans
Operating Procedures
Systems Operational Testing
Operational Systems Safety Review
Process Start-up
Process Operations
Staffing
Training
Site Specific Safety Plans
Operating Procedures
Systems Operational Testing
Operational Systems Safety Review
Process Start-up
Process Operations

Figure 5

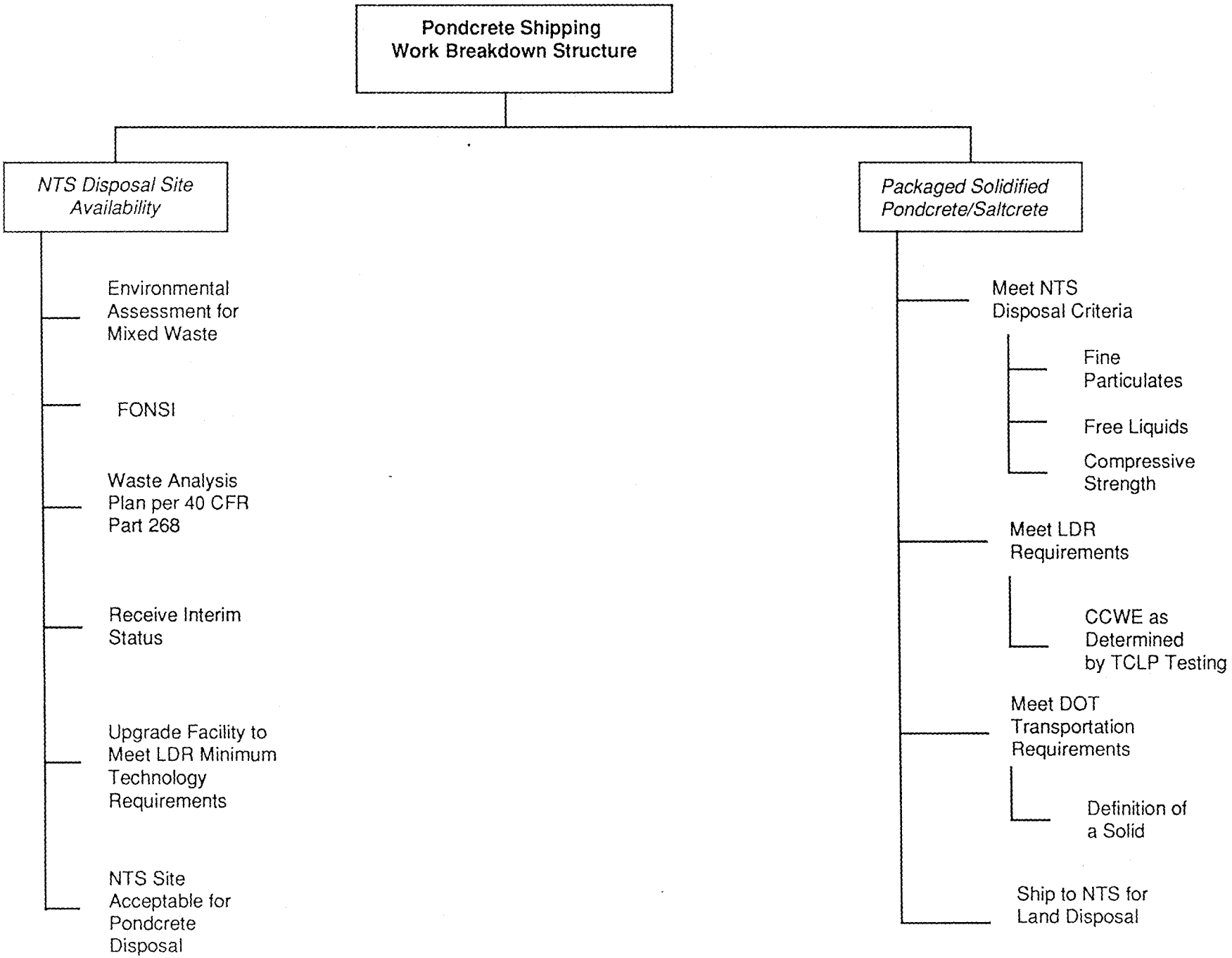
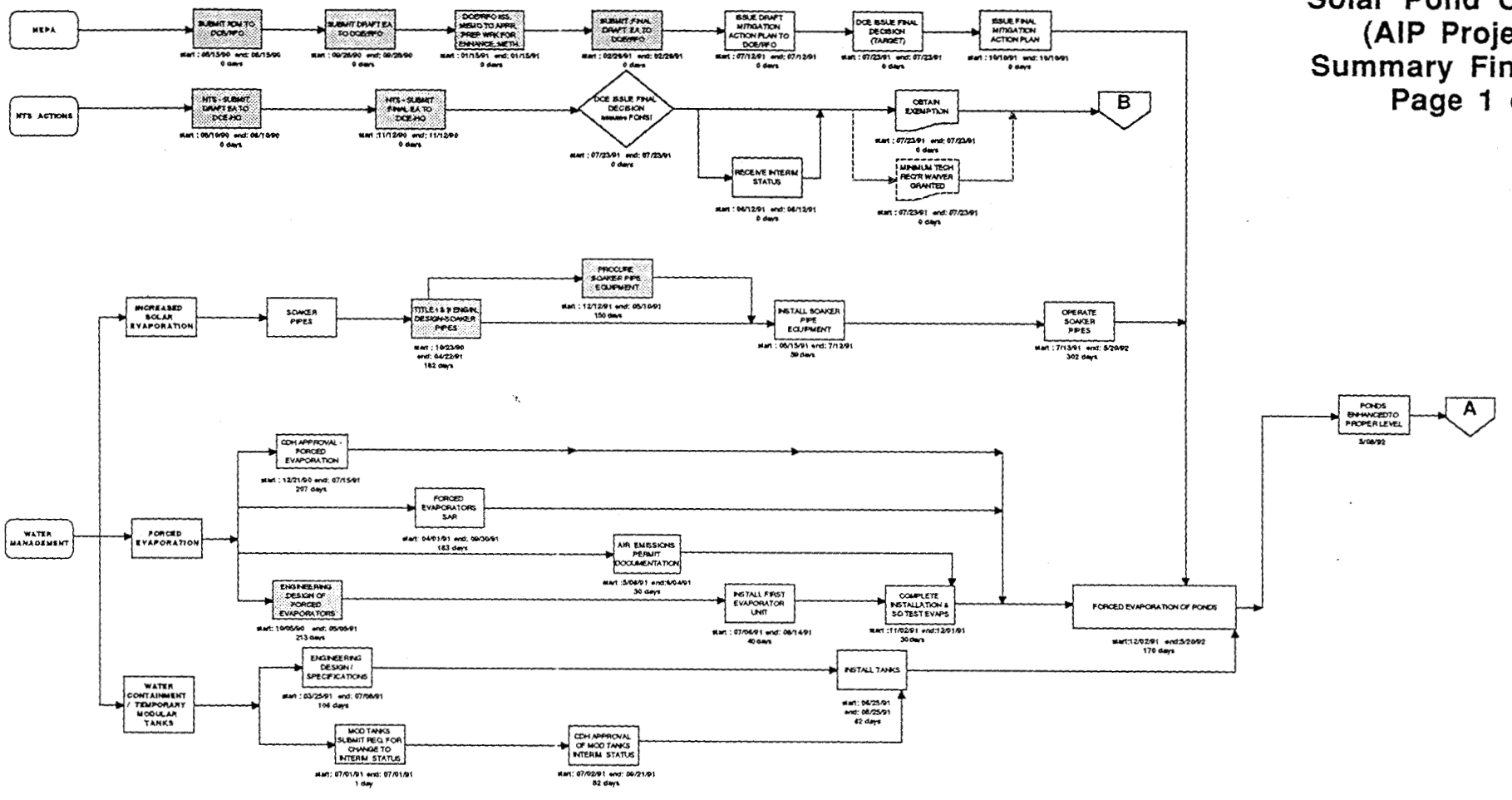

Pondcrete Shipping
Work Breakdown Structure
NTS Disposal Site Availability
Environmental Assessment for Mixed Waste
FONSI
Waste Analysis Plan per 40 CFR Part 268
Receive Interim Status
Upgrade Facility to Meet LDR Minimum Technology Requirements
NTS Site Acceptable for Pondcrete Disposal
Packaged Solidified Pondcrete/Saltcrete
Meet NTS Disposal Criteria
Fine Particulates
Free Liquids
Compressive Strength
Meet LDR Requirements
CCWE as Determined by TCLP Testing
Meet DOT Transportation Requirements
Definition of a Solid
Ship to NTS for Land Disposal

Figure 6



Solar Pond Clean Out (AIP Project) Summary Final Draft Page 1 of 2

Figure 6
(cont.)

Solar Pond Clean Out
(AIP Project)
Summary Final Draft
Page 2 of 2

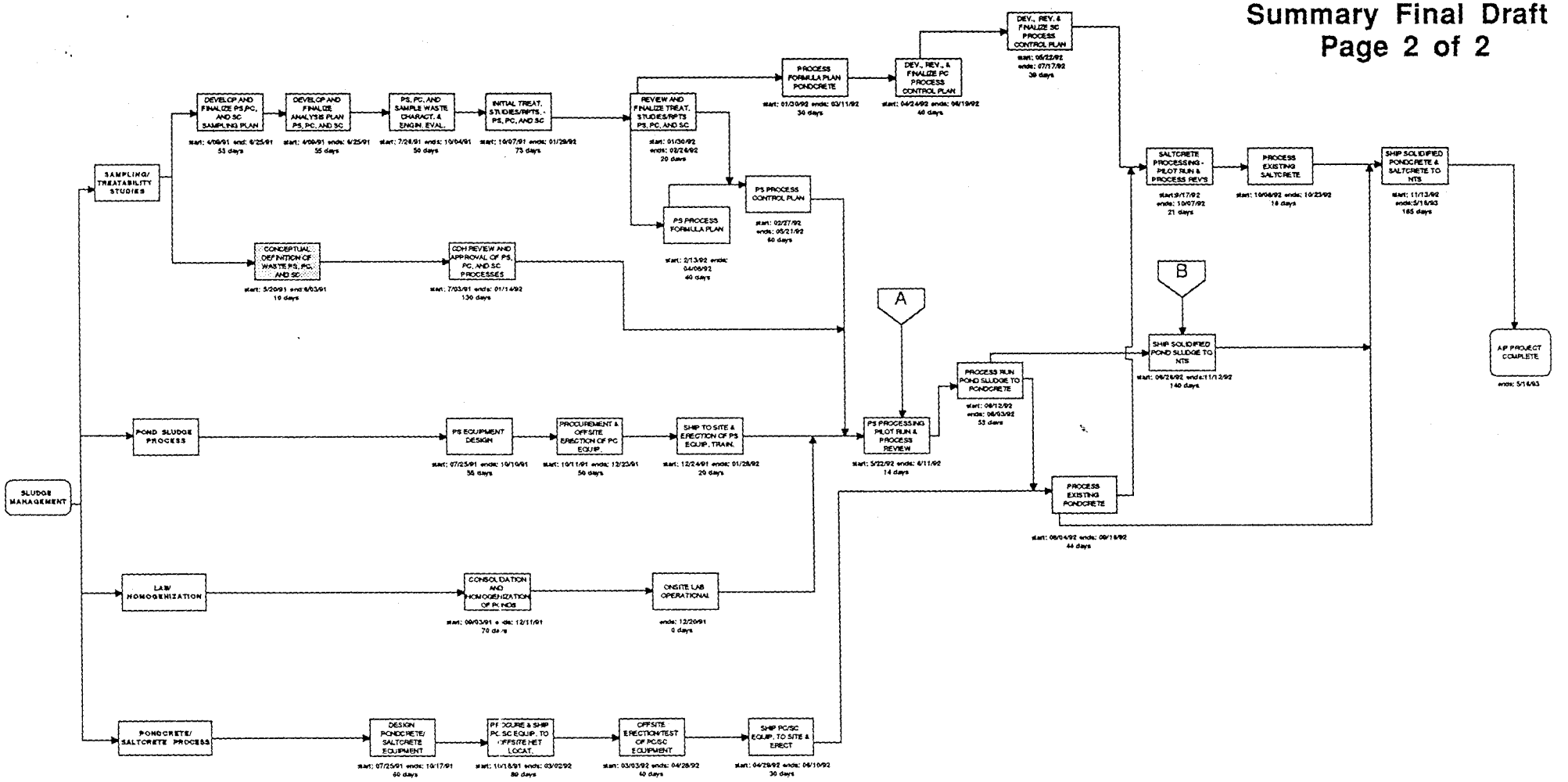


FIGURE 7

FLOW DIAGRAM
PORTABLE EVAPORATORS

TOTAL OF THREE EVAPORATING SYSTEMS IN PARALLEL (SYSTEM CONSISTS OF VC UNIT, MEMS UNIT, FEED TANK, TWO DISTILLATE TANKS, AND CONCENTRATE TANK)

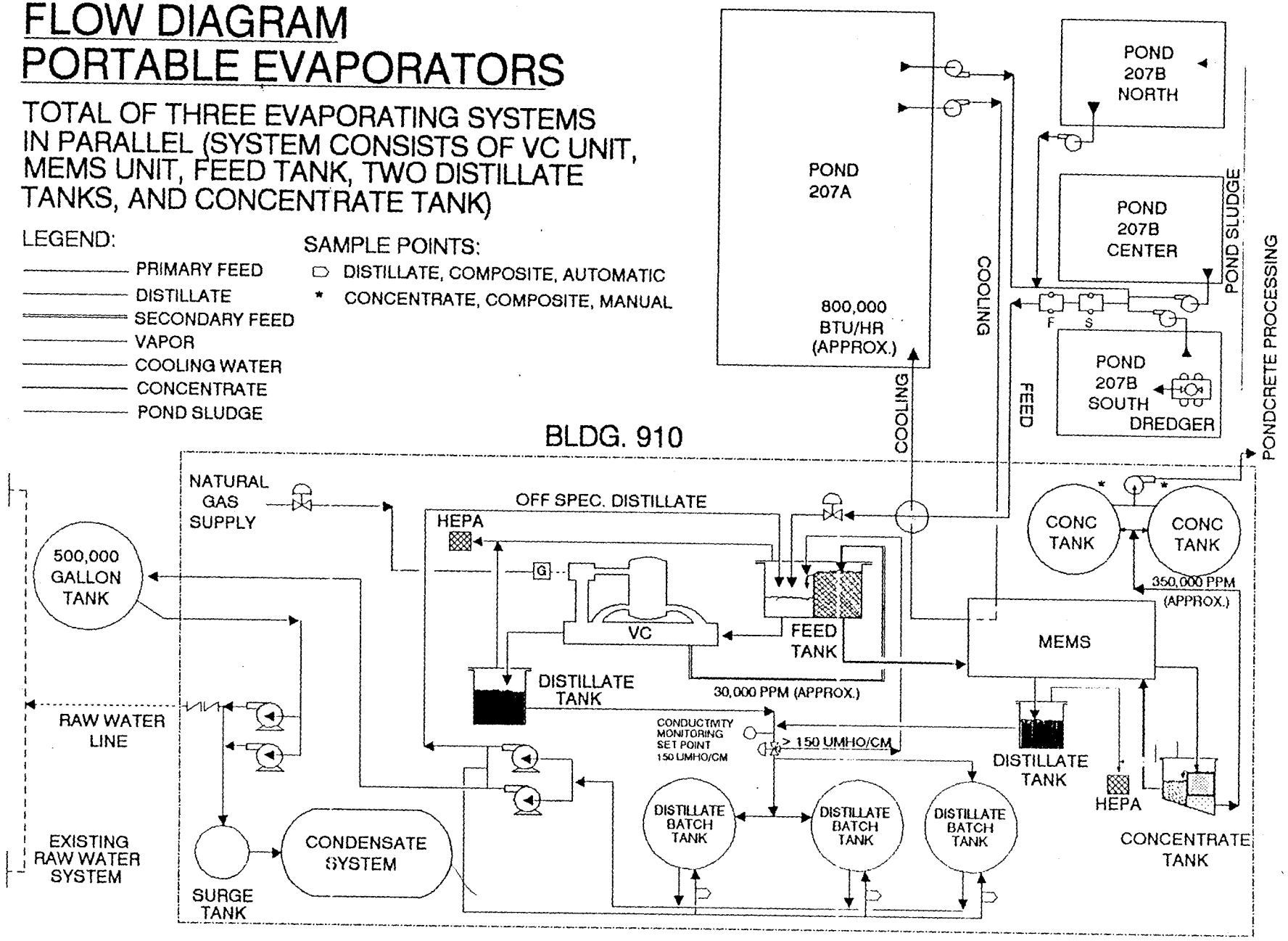


Figure 8

SUMMARY OF PROJECT RISKS

Risk	Level	Basis for Risk Assessment	Implication	Activities Planned to Minimize Risks
1. Schedule	High	• AIP requires accelerated cleanup	• Schedules will be missed. Public/political reaction would further damage plant credibility	• Matrix management approach to coordinate all phases of work
		• Project complexity involves many interdependent, parallel tasks		• Detailed planning to define total project scope
		• Regulatory constraints		• Specific requests for regulatory approvals are being prepared, Environmental Assessment (EA) being pursued on an accelerated schedule
		• Current pondcrete remix process capacity is unsatisfactory		• A high capacity continuous cementing process has been procured from HET
		• Safety Analysis reports for Building 910 Operations and HET cementing Processes.		• Accelerate characterization of waste streams as much as possible to permit SARs to be to be completed and processing to began on schedule

Figure 8 (Cont.)

Risk	Level	Basis for Risk Assessment	Implication	Activities Planned to Minimize Risks
		• Transportation of all solidified waste to NTS		• Accelerate cementing schedule as much as possible to permit waste shipments to start earlier than projected
		• Protection of emptied ponds from sediment and water accumulation		• Accelerate pond cleanout schedule as much as possible to have sufficient time to install the interim protective measures
2. Regulatory Constraints	High	• Changes to Part A Interim status	• Delay operational phases by project	• Obtain all required regulatory approvals on time
		• NEPA requires an EA for pond dewatering, removal, solidification of pond sludge, disposal of pondcrete and other process by-products	• Operational phases of project cannot start until FONSI is obtained	• Accelerated preparation of NEPA documentation
3. NTS disposal site availability	High	• Waste shipments not approved	• AIP milestone specifies shipment of pondcrete	• Respond to NTS audit deficiencies • Adequately characterize waste streams • Verify pondcrete meets all applicable disposal criteria • Coordinate shipping with NTS

Figure 8 (Cont.)

	Risk	Level	Basis for Risk Assessment	Implication	Activities Planned to Minimize Risks
4.	Cost	Moderate	• Preliminary costs estimates significantly exceed presently approved budget	• AIP schedule will not be met	• Negotiate resources to achieve plan or renegotiate AIP commitment
5.	Technical	Moderate	• Cementing process parameters not developed. Cementing process/equipment undefined	• Solidified waste volume may be excessive	• Development and testing will be done to optimize process parameters
			• Distillate water utilization	• Evaporative process may be disrupted and water management delayed	• Utilize distillate water in accordance with water usage plan.
			• Material handling plan not developed	• Processing time may cause schedule to be missed	• HET will assist in developing plan and provide material handling equipment
			• Quality Assurance plan for remix process inadequate for total project needs	• Certification of pond-crete for shipment will delay required shipping schedule.	• A Quality Assuance plan will be developed by HET for total program
			• Site requirements for cementing process undefined	• Delays in process implementation	• Activities are planned to integrate pondcrete recertification and HET cementing process

FIGURE 9

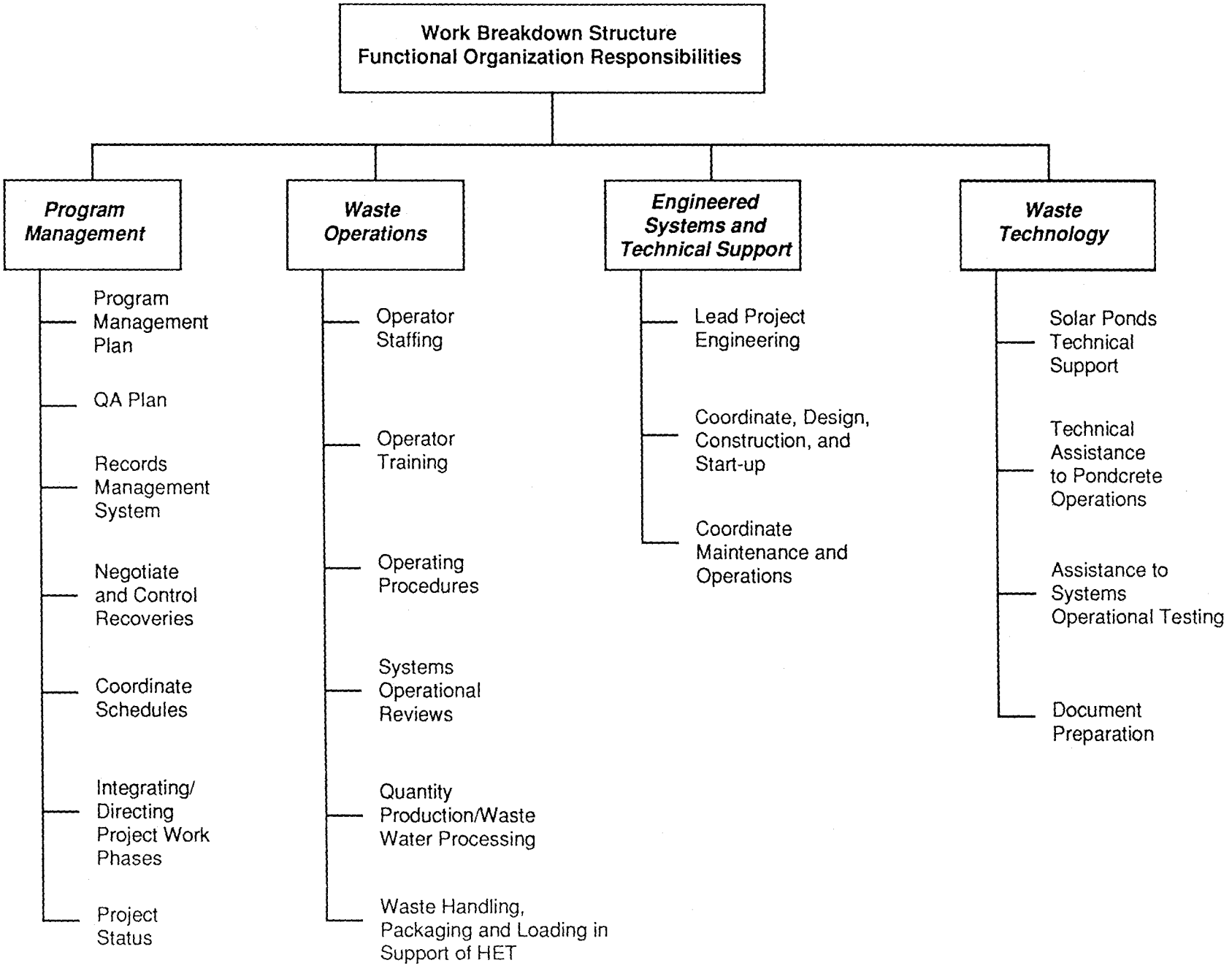

Work Breakdown Structure
Functional Organization Responsibilities
Program Management
Program Management Plan
QA Plan
Records Management System
Negotiate and Control Recoveries
Coordinate Schedules
Integrating/ Directing Project Work Phases
Project Status
Waste Operations
Operator Staffing
Operator Training
Operating Procedures
Systems Operational Reviews
Quantity Production/Waste Water Processing
Waste Handling, Packaging and Loading in Support of HET
Engineered Systems and Technical Support
Lead Project Engineering
Coordinate, Design, Construction, and Start-up
Coordinate Maintenance and Operations
Waste Technology
Solar Ponds Technical Support
Technical Assistance to Pondcrete Operations
Assistance to Systems Operational Testing
Document Preparation

FIGURE 9
(Cont)

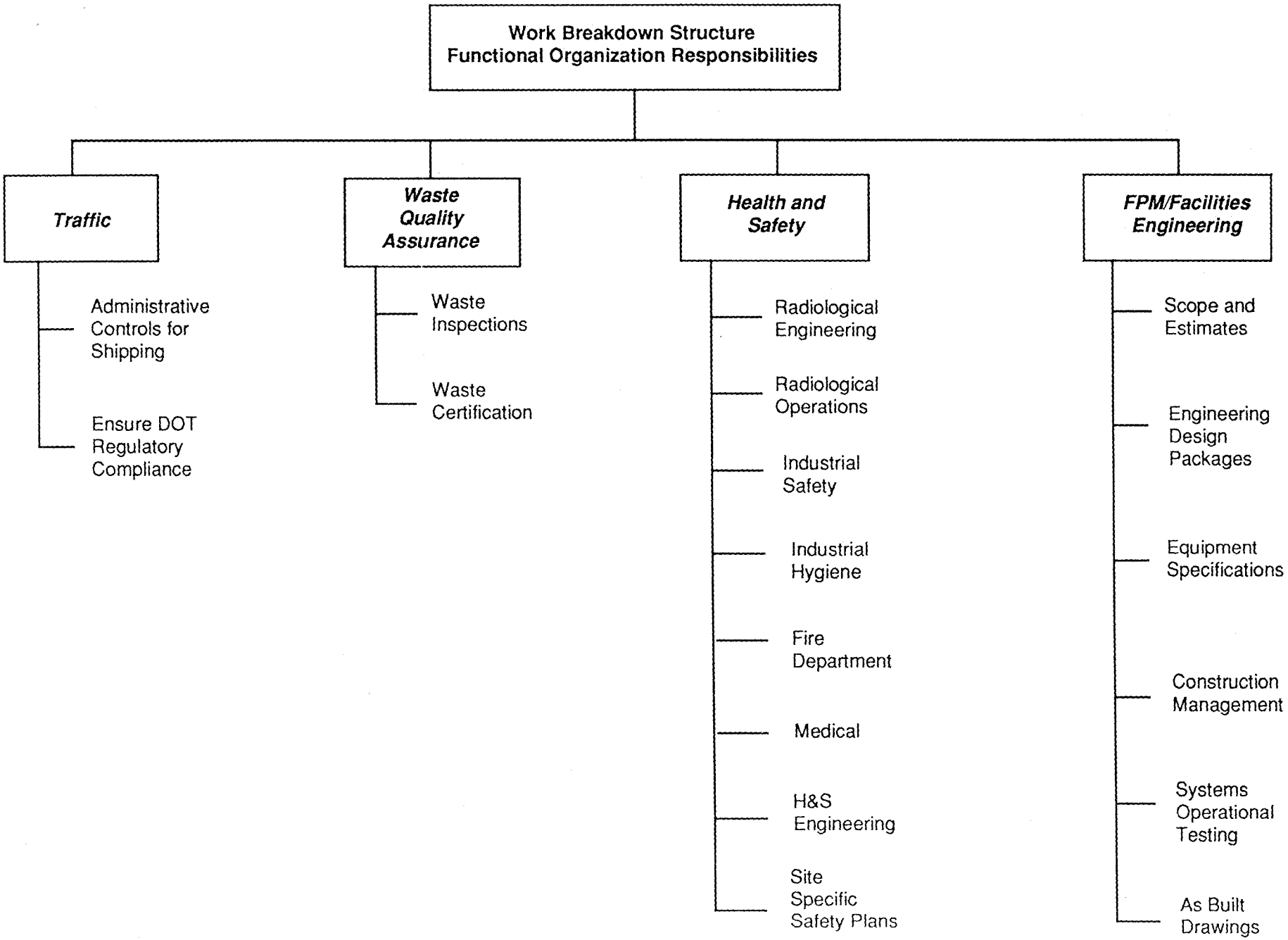


FIGURE 9
(Cont)

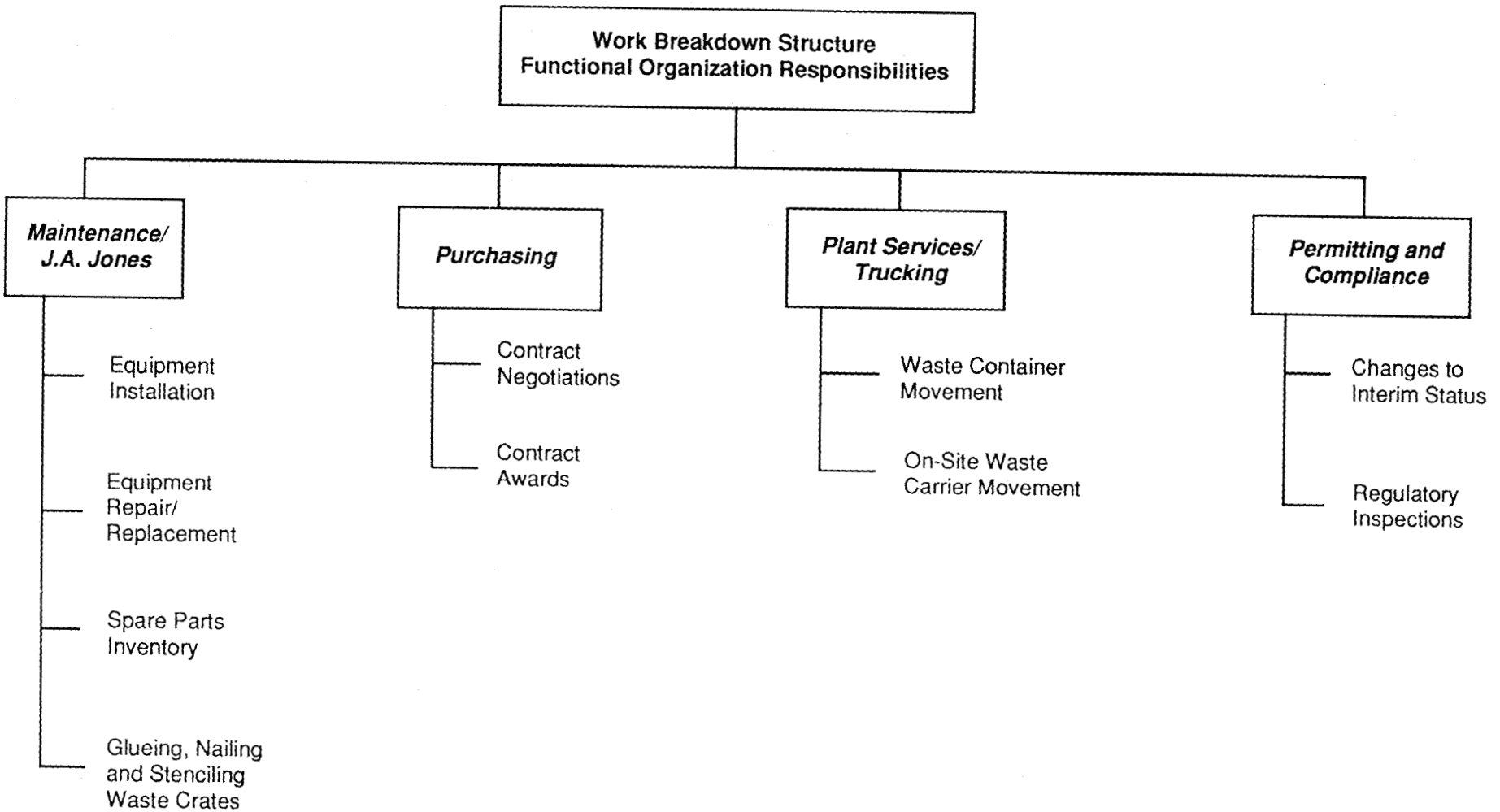


Figure 10

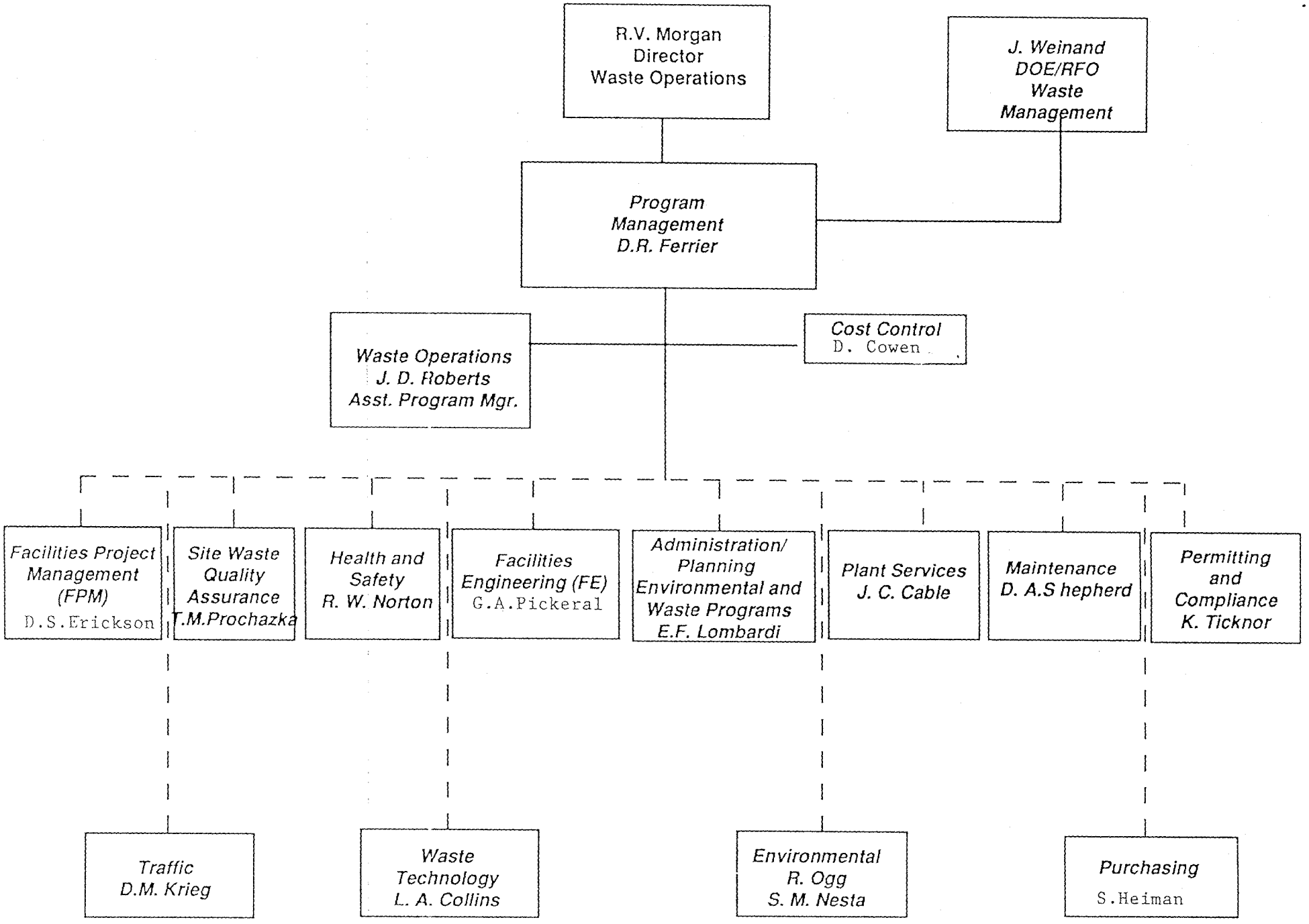
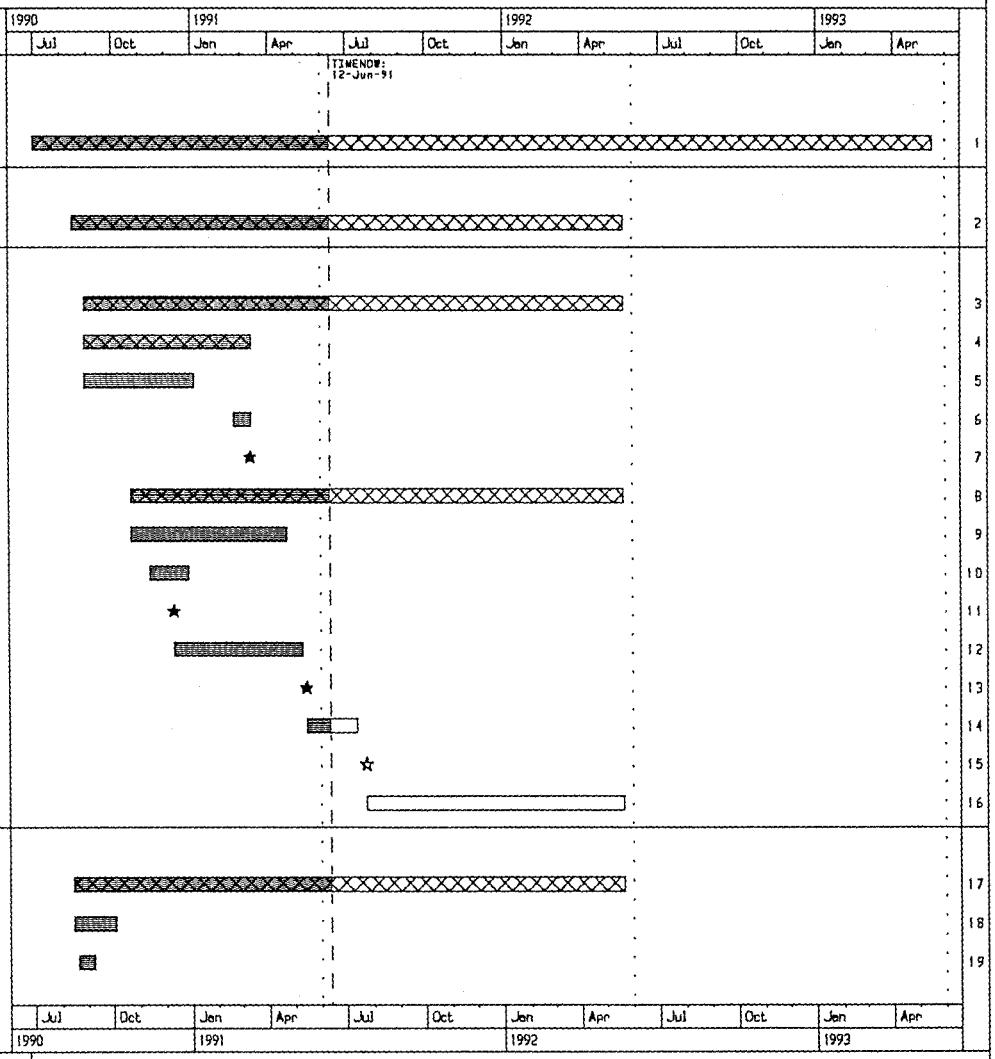

R.V. Morgan
Director
Waste Operations
J. Weinand
DOE/RFO
Waste
Management
Program
Management
D.R. Ferrier
Waste Operations
J. D. Roberts
Asst. Program Mgr.
Cost Control
D. Cowen
Facilities Project
Management
(FPM)
D.S.Erickson
Site Waste
Quality
Assurance
T.M.Prochazka
Health and
Safety
R. W. Norton
Facilities
Engineering (FE)
G.A.Pickeral
Administration/
Planning
Environmental and
Waste Programs
E.F. Lombardi
Plant Services
J. C. Cable
Maintenance
D. A.S hepherd
Permitting
and
Compliance
K. Ticknor
Traffic
D.M. Krieg
Waste
Technology
L. A. Collins
Environmental
R. Ogg
S. M. Nesta
Purchasing
S.Heiman

Figure 11

Rocky Flats Plant
SOLAR POND CLEAN OUT (AIP PROJECT)

	ACT. NUM	ACTIVITY DESCRIPTION	EARLY START	EARLY FINISH	CURRENT DURATION
		PROJECT SUMMARY			
1	1258B1A000	SOLAR POND CLEAN OUT (AIP PROJECT)	01-Jul-90	16-May-93	1,051
		WATER MANAGEMENT			
2	1258B1A150	WATER MANAGEMENT	15-Aug-90	20-May-92	645
		INCREASED SOLAR EVAPORATION			
3	1258B1A200	INCREASED SOLAR EVAPORATION	29-Aug-90	20-May-92	631
4	1258B1A300	DYE	29-Aug-90	11-Mar-91	195
5	1258B10105	CDH APPROVAL - DYE (WRITTEN)	29-Aug-90	04-Jan-91	129
6	1258B10140	ADD SOLAR DYE TO PONDS	20-Feb-91	11-Mar-91	20
7	1258B10145	COMPLETE SOLAR DYE ADDITION TO PONDS	11-Mar-91	11-Mar-91	0
8	1258B1A350	SOAKER PIPES	23-Oct-90	20-May-92	576
9	1258B10115	TITLE I/TITLE II ENGIN. DESIGN-SOAKER PIPES	23-Oct-90	22-Apr-91	182
10	1258B10125	CDH APPROVAL - SOAKER PIPES	14-Nov-90	28-Dec-90	45
11	1258B10130	BEG. SOAKER PIPE PROCUREMENT	12-Dec-90	12-Dec-90	0
12	1258B10135	PROCURE SOAKER PIPE EQUIPMENT	12-Dec-90	10-May-91	150
13	1258B10165	BEG. SOAKER PIPE EQUIPMENT INSTALLATION	15-May-91	15-May-91	0
14	1258B10150	INSTALL SOAKER PIPE EQUIPMENT	15-May-91	12-Jul-91	59
15	1258B10175	BEG. OPERATING SOAKER PIPES	24-Jul-91	24-Jul-91	0
16	1258B10170	OPERATE SOAKER PIPES	24-Jul-91	20-May-92	302
		FORCED EVAPORATION			
17	1258B1A400	FORCED EVAPORATION	15-Aug-90	20-May-92	645
18	1258B10190	ENGIN. SCOPE/ESTIM. FOR SUPPORT NETWK/SITE PREP.	15-Aug-90	02-Oct-90	49
19	1258B10195	BUDGET APPROVAL	20-Aug-90	07-Sep-90	19



PROGRESS
HAMMOCK
ACTIVITY_BAR

FILE NAME: OPS_BAR2

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Figure 11
(cont.)

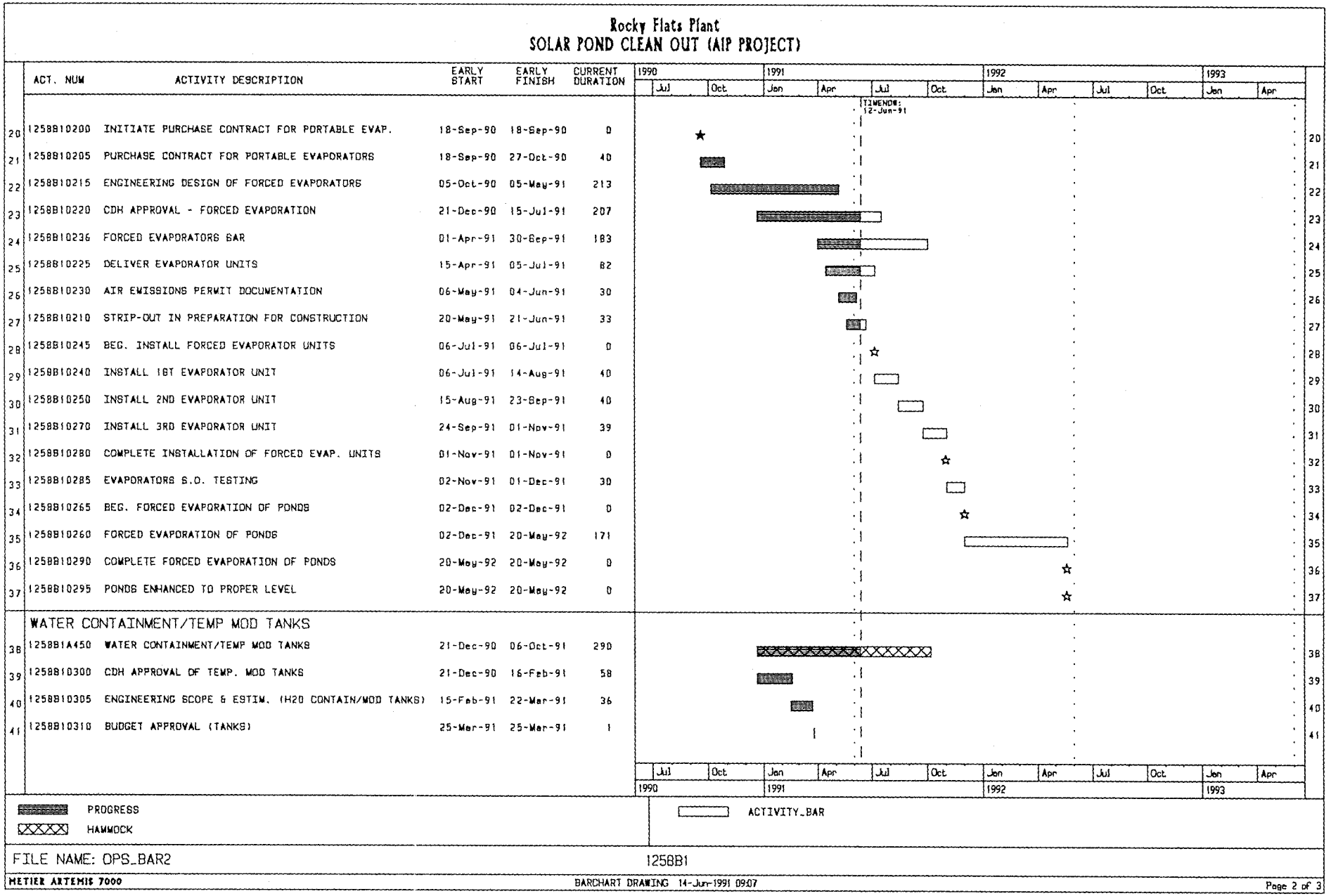

Figure 11
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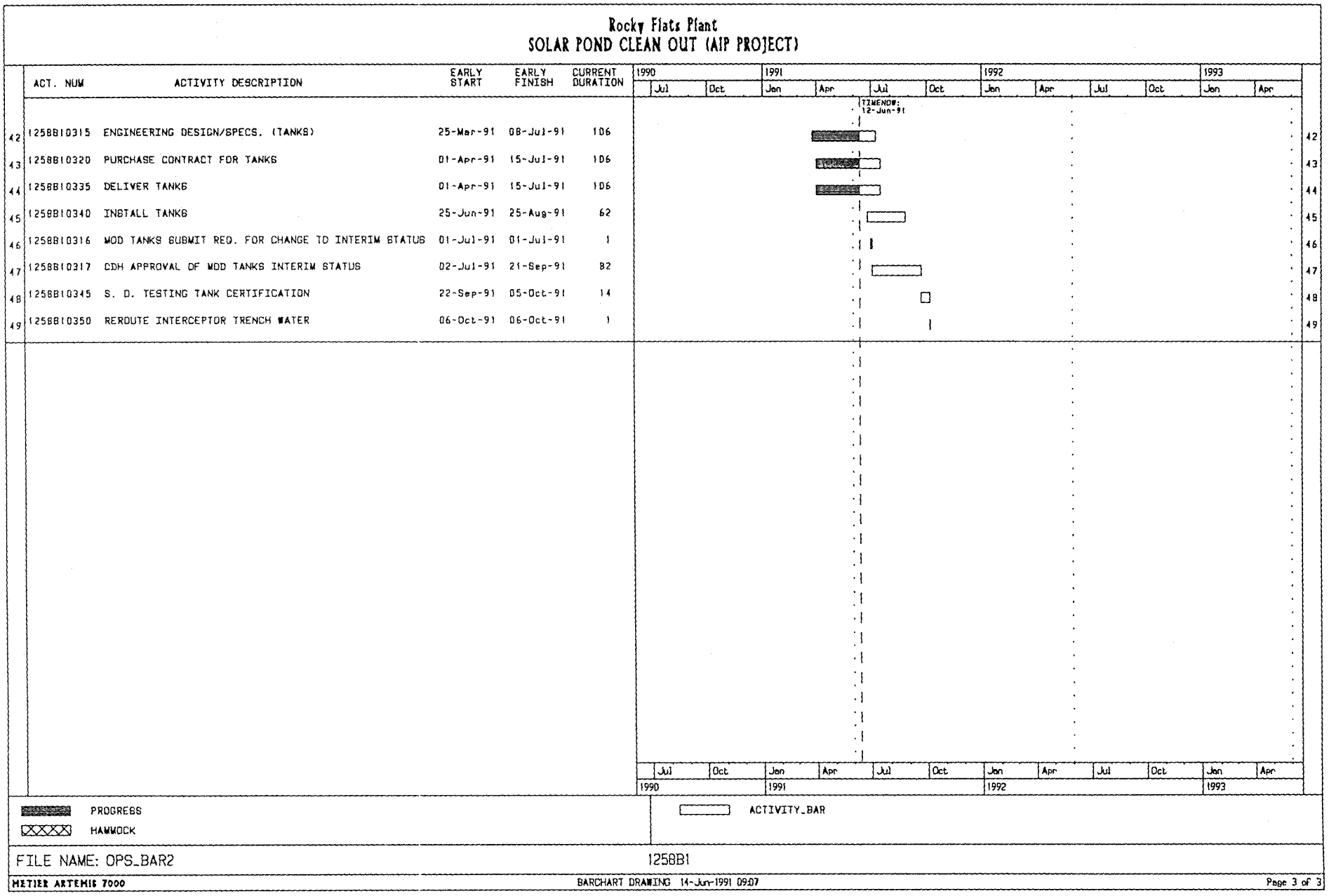
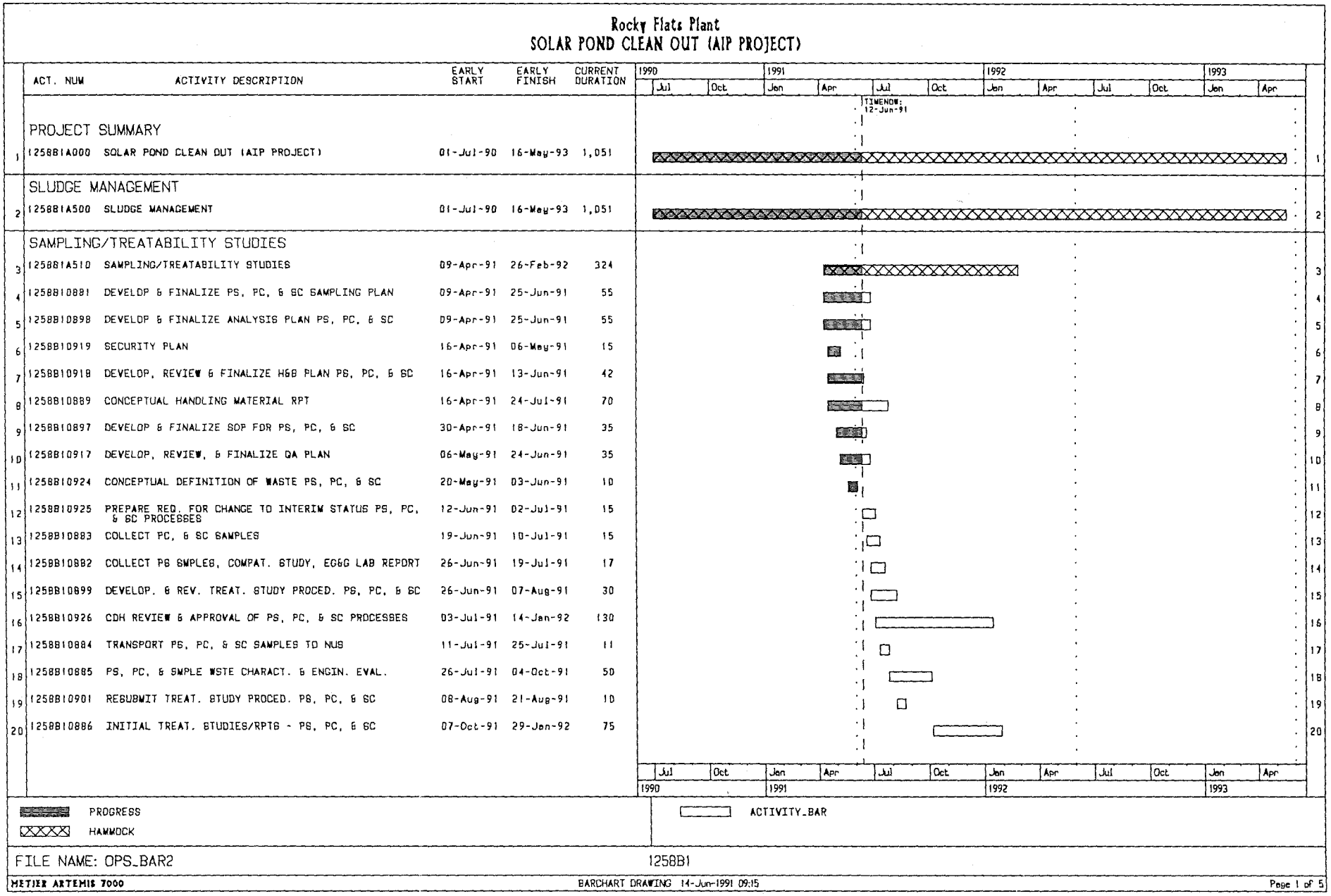


Figure 12


Rocky Flats Plant
SOLAR POND CLEAN OUT (AIP PROJECT)
ACT. NUM
ACTIVITY DESCRIPTION
EARLY START
EARLY FINISH
CURRENT DURATION
1990
1991
1992
1993
Jul
Oct
Jan
Apr
Jul
Oct
Jan
Apr
Jul
Oct
Jan
Apr
TIMENOW: 12-Jun-91
PROJECT SUMMARY
1 1258B1A000 SOLAR POND CLEAN OUT (AIP PROJECT) 01-Jul-90 16-May-93 1,051
SLUDGE MANAGEMENT
2 1258B1A500 SLUDGE MANAGEMENT 01-Jul-90 16-May-93 1,051
SAMPLING/TREATABILITY STUDIES
3 1258B1A510 SAMPLING/TREATABILITY STUDIES 09-Apr-91 26-Feb-92 324
4 1258B10881 DEVELOP & FINALIZE PS, PC, & SC SAMPLING PLAN 09-Apr-91 25-Jun-91 55
5 1258B10898 DEVELOP & FINALIZE ANALYSIS PLAN PS, PC, & SC 09-Apr-91 25-Jun-91 55
6 1258B10919 SECURITY PLAN 16-Apr-91 06-May-91 15
7 1258B10918 DEVELOP, REVIEW & FINALIZE H&S PLAN PS, PC, & SC 16-Apr-91 13-Jun-91 42
8 1258B10889 CONCEPTUAL HANDLING MATERIAL RPT 16-Apr-91 24-Jul-91 70
9 1258B10897 DEVELOP & FINALIZE SOP FOR PS, PC, & SC 30-Apr-91 18-Jun-91 35
10 1258B10917 DEVELOP, REVIEW, & FINALIZE QA PLAN 06-May-91 24-Jun-91 35
11 1258B10924 CONCEPTUAL DEFINITION OF WASTE PS, PC, & SC 20-May-91 03-Jun-91 10
12 1258B10925 PREPARE REQ. FOR CHANGE TO INTERIM STATUS PS, PC, & SC PROCESSES 12-Jun-91 02-Jul-91 15
13 1258B10883 COLLECT PC, & SC SAMPLES 19-Jun-91 10-Jul-91 15
14 1258B10882 COLLECT PS SMPLES, COMPAT. STUDY, EG&G LAB REPORT 26-Jun-91 19-Jul-91 17
15 1258B10899 DEVELOP. & REV. TREAT. STUDY PROCED. PS, PC, & SC 26-Jun-91 07-Aug-91 30
16 1258B10926 CDH REVIEW & APPROVAL OF PS, PC, & SC PROCESSES 03-Jul-91 14-Jan-92 130
17 1258B10884 TRANSPORT PS, PC, & SC SAMPLES TO NUS 11-Jul-91 25-Jul-91 11
18 1258B10885 PS, PC, & SMPLE WSTE CHARACT. & ENGIN. EVAL. 26-Jul-91 04-Oct-91 50
19 1258B10901 RESUBMIT TREAT. STUDY PROCED. PS, PC, & SC 08-Aug-91 21-Aug-91 10
20 1258B10886 INITIAL TREAT. STUDIES/RPTS - PS, PC, & SC 07-Oct-91 29-Jan-92 75
PROGRESS
HAMMOCK
ACTIVITY_BAR
FILE NAME: OPS_BAR2
1258B1
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Page 1 of 5

Figure 12
(cont.)

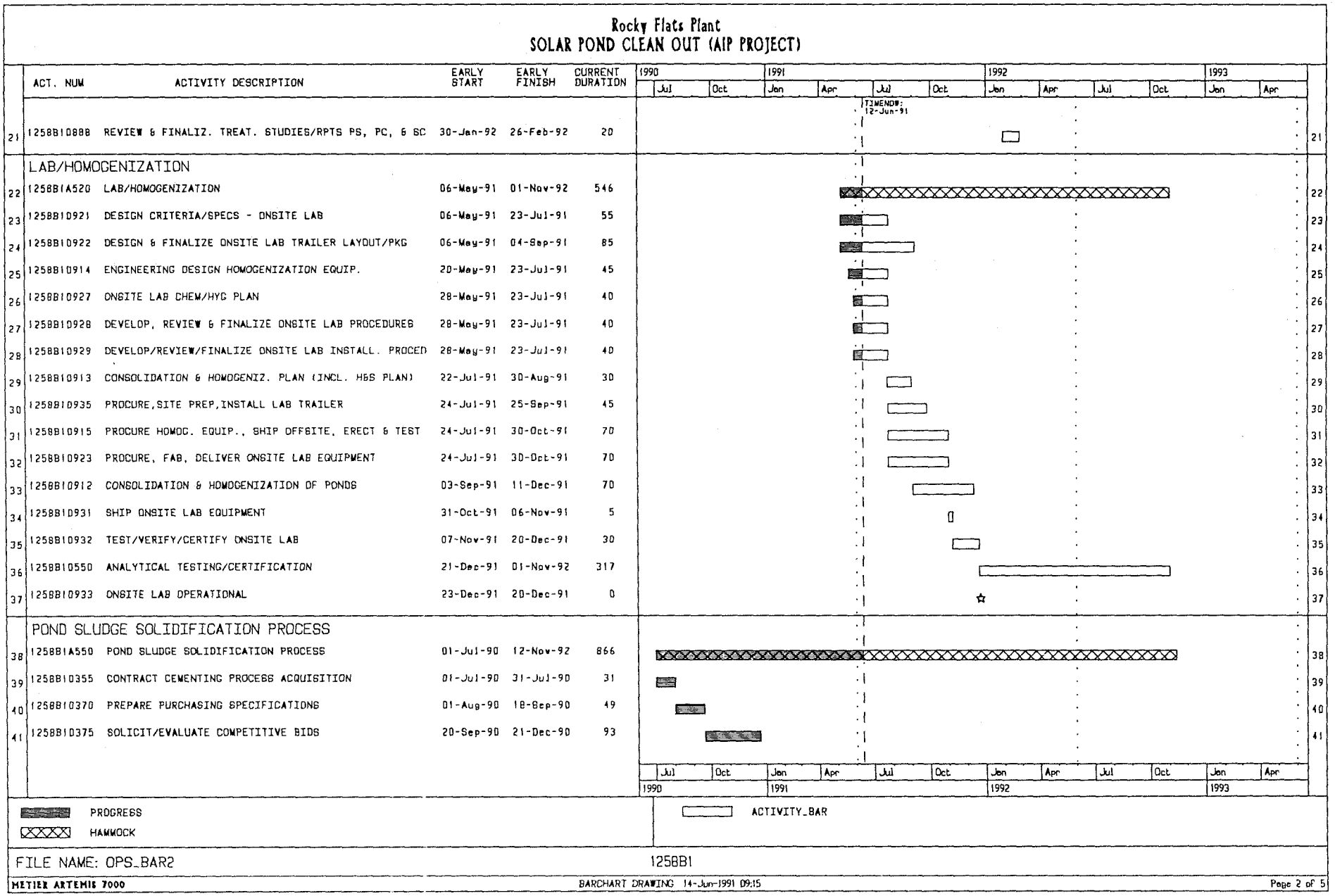

Figure 12
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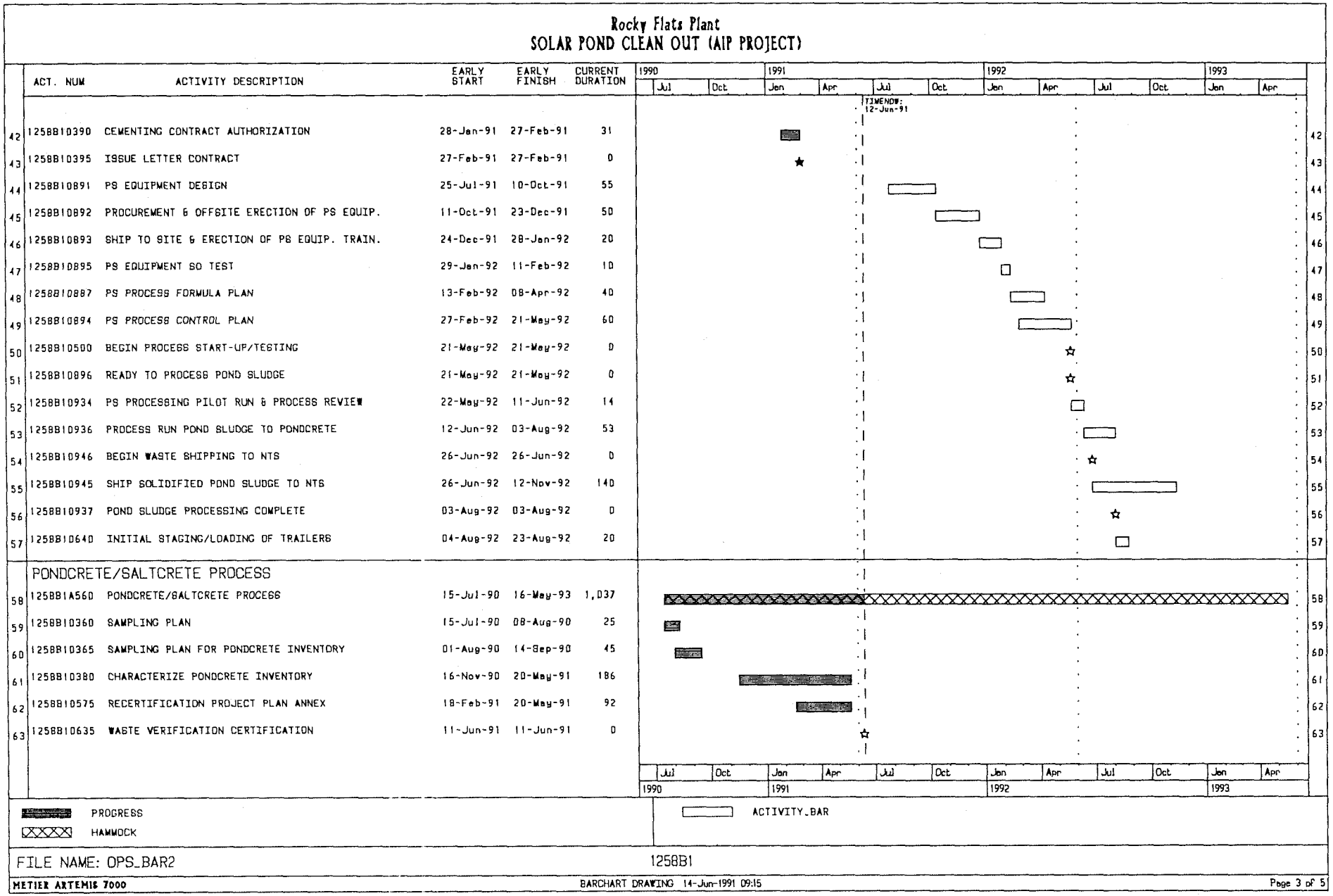
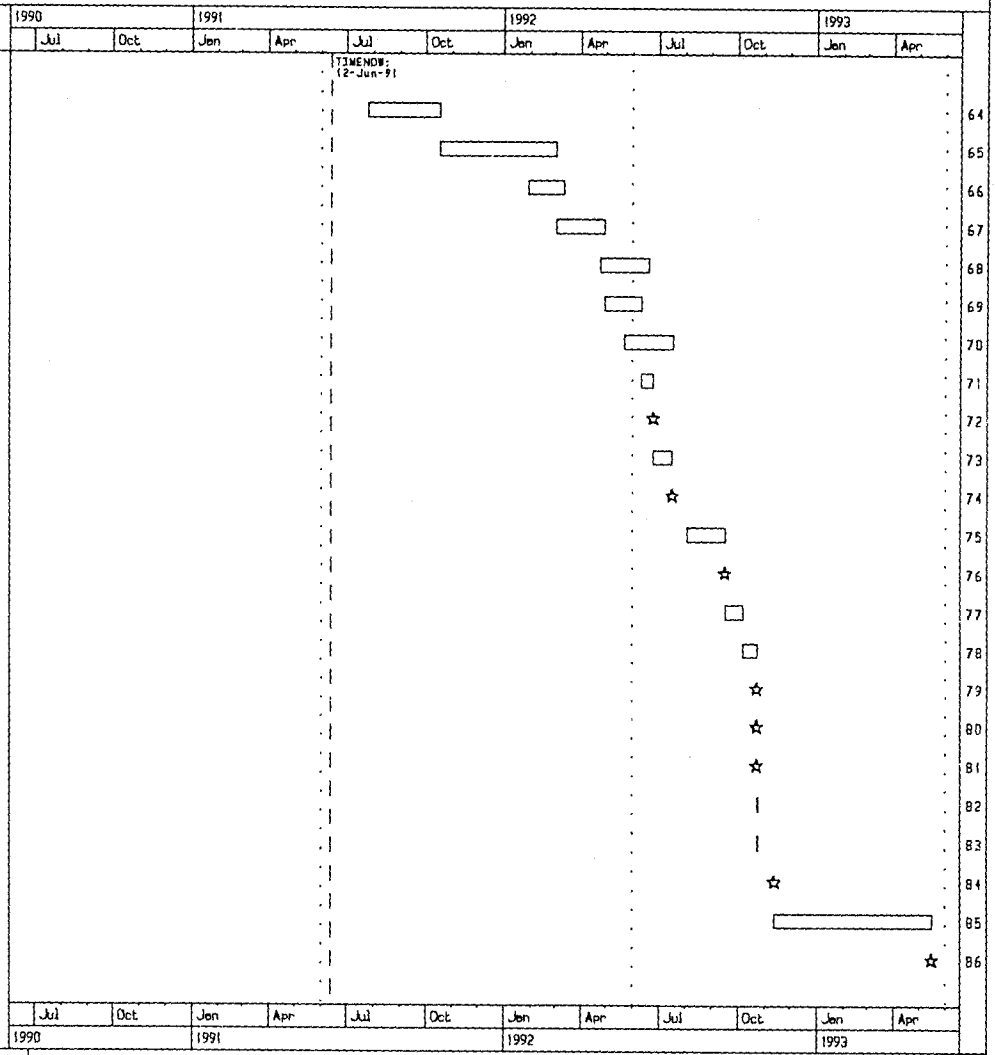


Figure 12
(cont.)

Rocky Flats Plant
SOLAR POND CLEAN OUT (AIP PROJECT)

	ACT. NUM	ACTIVITY DESCRIPTION	EARLY START	EARLY FINISH	CURRENT DURATION
64	1258B10902	DESIGN PONDCRETE/SALTCRETE EQUIPMENT	25-Jul-91	17-Oct-91	60
65	1258B10903	PROCURE & SHIP PC/SC EQUIP. TO OFFSITE HET LOCAT.	18-Oct-91	02-Mar-92	89
66	1258B10916	PROCESS FORMULA PLAN PONDCRETE	30-Jan-92	11-Mar-92	30
67	1258B10904	OFFSITE ERECTION/TEST OF PC/SC EQUIPMENT	03-Mar-92	28-Apr-92	40
68	1258B10908	DEV., REV., & FINALIZE PC PROCESS CONTROL PLAN	24-Apr-92	19-Jun-92	40
69	1258B10905	SHIP PC/SC EQUIP. TO SITE & ERECT	29-Apr-92	10-Jun-92	30
70	1258B10909	DEVELOP, REVIEW & FINALIZE SC PROCESS CONTROL PLAN	22-May-92	17-Jul-92	39
71	1258B10906	PC/SC EQUIPMENT SD TEST	11-Jun-92	24-Jun-92	10
72	1258B10907	READY TO PROCESS PONDCRETE	25-Jun-92	24-Jun-92	0
73	1258B10938	PONDCRETE PROCESSING PILOT RUN & PROCESS REVIEWS	25-Jun-92	16-Jul-92	22
74	1258B10911	READY TO PROCESS SALTCRETE	17-Jul-92	17-Jul-92	0
75	1258B10939	PROCESS EXISTING PONDCRETE	04-Aug-92	16-Sep-92	44
76	1258B10941	PONDCRETE PROCESSING COMPLETE	16-Sep-92	16-Sep-92	0
77	1258B10942	SALTCRETE PROCESSING - PILOT RUN & PROCESS REVIEWS	17-Sep-92	07-Oct-92	21
78	1258B10943	PROCESS EXISTING SALTCRETE	08-Oct-92	23-Oct-92	16
79	1258B10773	SALTCRETE PROCESSING COMPLETE	23-Oct-92	23-Oct-92	0
80	1258B10944	WASTE PROCESING COMPLETE	23-Oct-92	23-Oct-92	0
81	1258B10947	BEGIN FINAL PROJECT REPORT	23-Oct-92	23-Oct-92	0
82	1258B10530	POND LINER PROTECTIVE MEASURES PLAN	24-Oct-92	24-Oct-92	1
83	1258B10540	DECOMMISSIONING DECONTAMINATION PLAN	24-Oct-92	24-Oct-92	1
84	1258B10560	BEGIN SHIPMENT OF SOLIDIFIED PONDCRETE/SALTCRETE TO NTS	13-Nov-92	13-Nov-92	0
85	1258B10565	SHIP SOLIDIFIED PONDCRETE/SALTCRETE TO NTS	13-Nov-92	16-May-93	195
86	1258B10779	WASTE SHIPPING TO NTS COMPLETE	16-May-93	16-May-93	0



PROGRESS
HAMMOCK
ACTIVITY_BAR

FILE NAME: OPS_BAR2

1258B1

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Figure 12
(cont.)

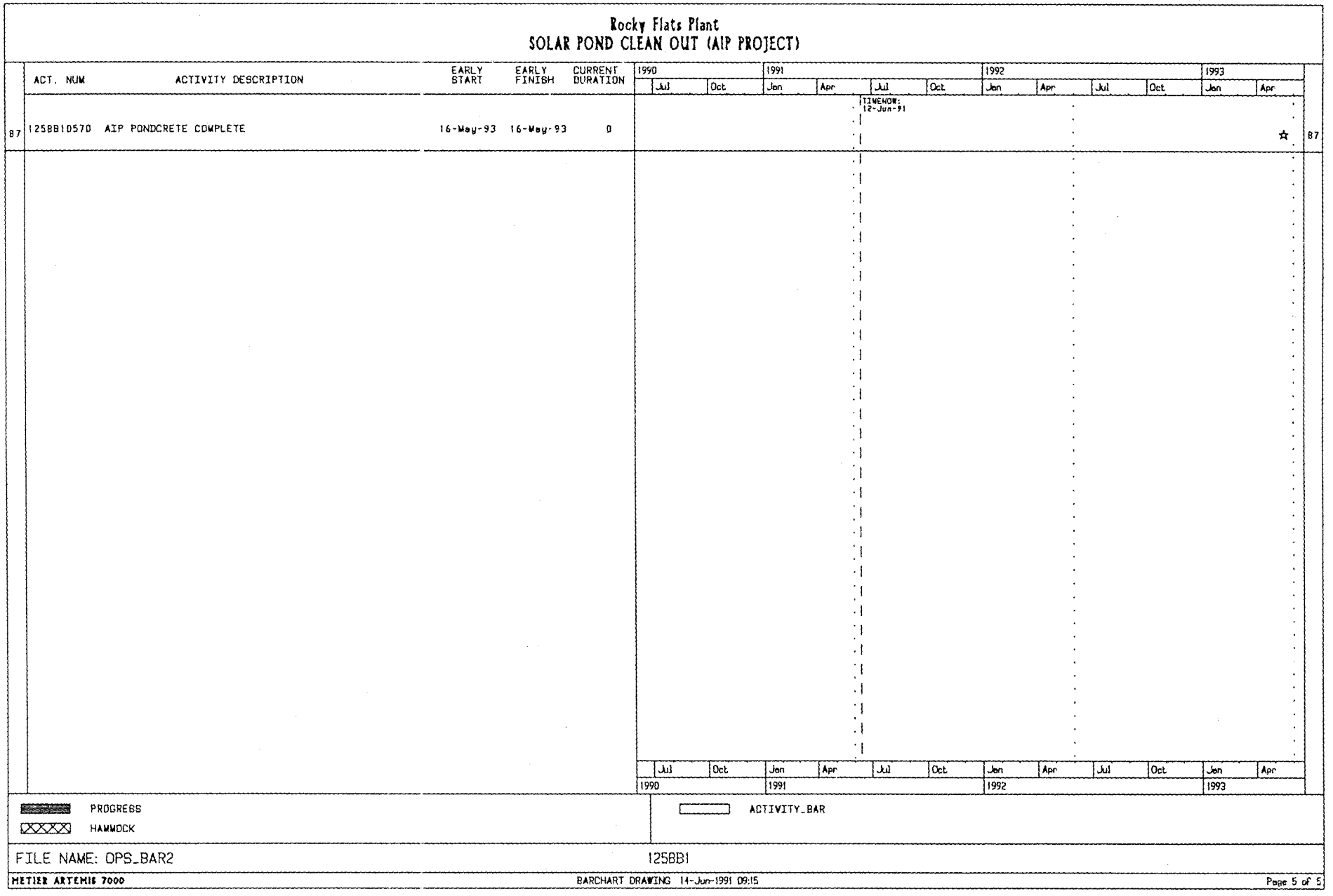

Figure 13

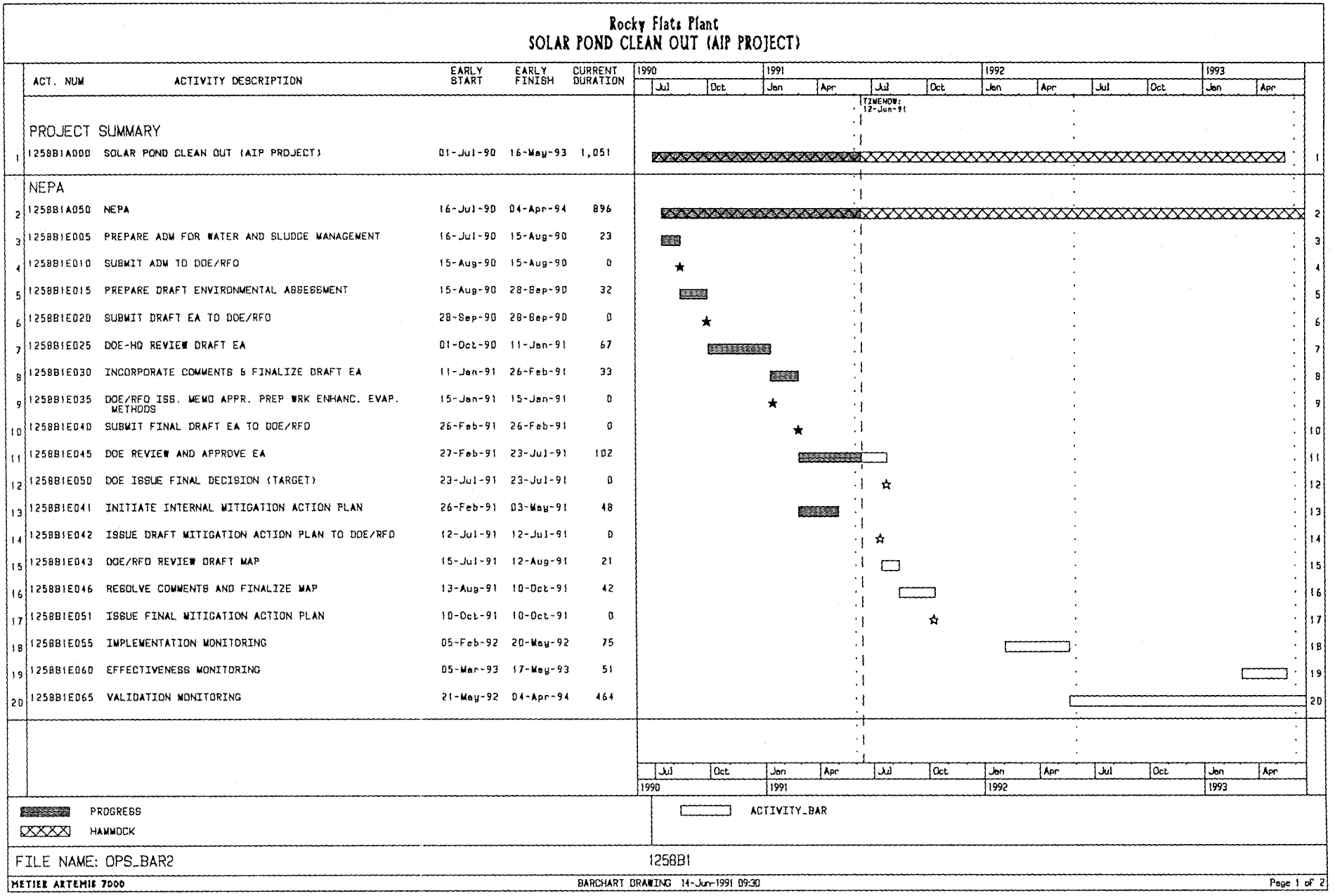
Rocky Flats Plant
SOLAR POND CLEAN OUT (AIP PROJECT)
ACT. NUM
ACTIVITY DESCRIPTION
EARLY START
EARLY FINISH
CURRENT DURATION
1990
1991
1992
1993
Jul
Oct
Jan
Apr
Jul
Oct
Jan
Apr
Jul
Oct
Jan
Apr
TIMENOW: 12-Jun-91
PROJECT SUMMARY
1 1258B1A000 SOLAR POND CLEAN OUT (AIP PROJECT) 01-Jul-90 16-May-93 1,051
NEPA
2 1258B1A050 NEPA 16-Jul-90 04-Apr-94 896
3 1258B1E005 PREPARE ADM FOR WATER AND SLUDGE MANAGEMENT 16-Jul-90 15-Aug-90 23
4 1258B1E010 SUBMIT ADM TO DOE/RFO 15-Aug-90 15-Aug-90 0
5 1258B1E015 PREPARE DRAFT ENVIRONMENTAL ASSESSMENT 15-Aug-90 28-Sep-90 32
6 1258B1E020 SUBMIT DRAFT EA TO DOE/RFO 28-Sep-90 28-Sep-90 0
7 1258B1E025 DOE-HQ REVIEW DRAFT EA 01-Oct-90 11-Jan-91 67
8 1258B1E030 INCORPORATE COMMENTS & FINALIZE DRAFT EA 11-Jan-91 26-Feb-91 33
9 1258B1E035 DOE/RFO ISS. MEMO APPR. PREP WRK ENHANC. EVAP. METHODS 15-Jan-91 15-Jan-91 0
10 1258B1E040 SUBMIT FINAL DRAFT EA TO DOE/RFO 26-Feb-91 26-Feb-91 0
11 1258B1E045 DOE REVIEW AND APPROVE EA 27-Feb-91 23-Jul-91 102
12 1258B1E050 DOE ISSUE FINAL DECISION (TARGET) 23-Jul-91 23-Jul-91 0
13 1258B1E041 INITIATE INTERNAL MITIGATION ACTION PLAN 26-Feb-91 03-May-91 48
14 1258B1E042 ISSUE DRAFT MITIGATION ACTION PLAN TO DOE/RFO 12-Jul-91 12-Jul-91 0
15 1258B1E043 DOE/RFO REVIEW DRAFT MAP 15-Jul-91 12-Aug-91 21
16 1258B1E046 RESOLVE COMMENTS AND FINALIZE MAP 13-Aug-91 10-Oct-91 42
17 1258B1E051 ISSUE FINAL MITIGATION ACTION PLAN 10-Oct-91 10-Oct-91 0
18 1258B1E055 IMPLEMENTATION MONITORING 05-Feb-92 20-May-92 75
19 1258B1E060 EFFECTIVENESS MONITORING 05-Mar-93 17-May-93 51
20 1258B1E065 VALIDATION MONITORING 21-May-92 04-Apr-94 464
PROGRESS
HAMMOCK
ACTIVITY_BAR
FILE NAME: OPS_BAR2
1258B1
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Figure 13
(cont.)

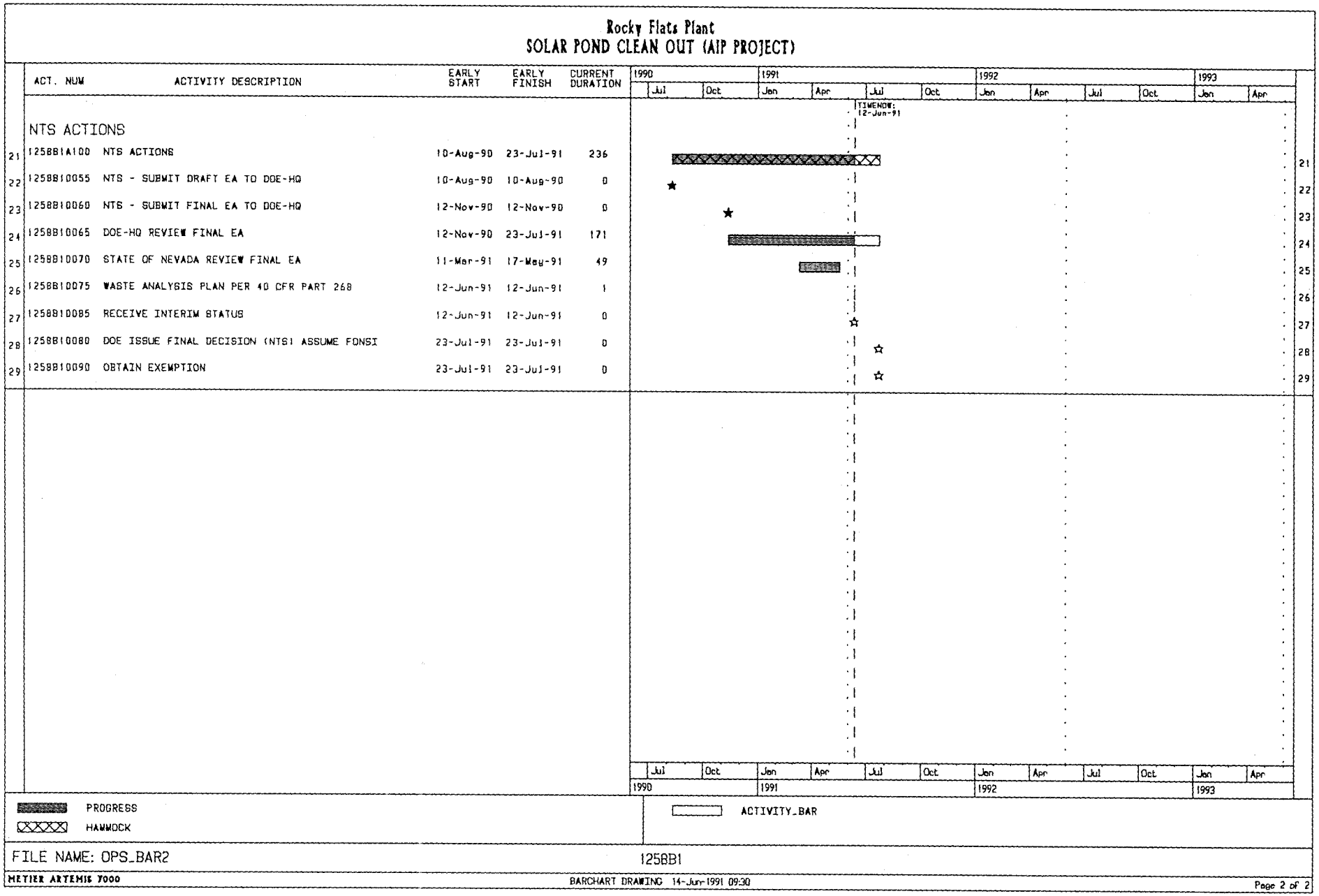

Figure 14

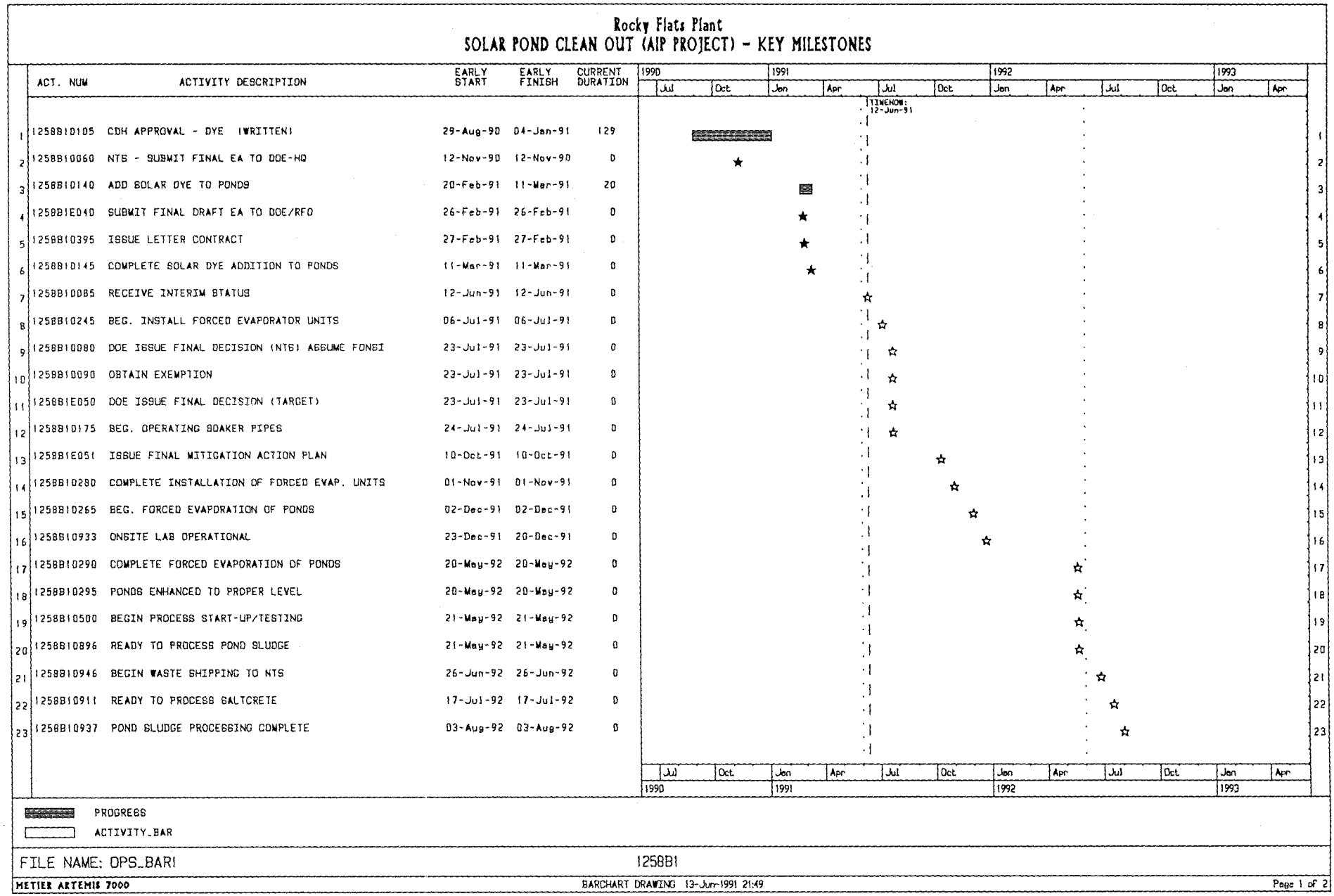
Rocky Flats Plant
SOLAR POND CLEAN OUT (AIP PROJECT) - KEY MILESTONES
ACT. NUM
ACTIVITY DESCRIPTION
EARLY START
EARLY FINISH
CURRENT DURATION
1258B1D105 CDH APPROVAL - DYE (WRITTEN) 29-Aug-90 04-Jan-91 129
1258B10060 NTS - SUBMIT FINAL EA TO DOE-HQ 12-Nov-90 12-Nov-90 0
1258B1D140 ADD SOLAR DYE TO PONDS 20-Feb-91 11-Mar-91 20
1258B1E040 SUBMIT FINAL DRAFT EA TO DOE/RFO 26-Feb-91 26-Feb-91 0
1258B10395 ISSUE LETTER CONTRACT 27-Feb-91 27-Feb-91 0
1258B1D145 COMPLETE SOLAR DYE ADDITION TO PONDS 11-Mar-91 11-Mar-91 0
1258B10085 RECEIVE INTERIM STATUS 12-Jun-91 12-Jun-91 0
1258B10245 BEG. INSTALL FORCED EVAPORATOR UNITS 06-Jul-91 06-Jul-91 0
1258B10080 DOE ISSUE FINAL DECISION (NTS) ASSUME FONSI 23-Jul-91 23-Jul-91 0
1258B10090 OBTAIN EXEMPTION 23-Jul-91 23-Jul-91 0
1258B1E050 DOE ISSUE FINAL DECISION (TARGET) 23-Jul-91 23-Jul-91 0
1258B1D175 BEG. OPERATING SOAKER PIPES 24-Jul-91 24-Jul-91 0
1258B1E051 ISSUE FINAL MITIGATION ACTION PLAN 10-Oct-91 10-Oct-91 0
1258B10280 COMPLETE INSTALLATION OF FORCED EVAP. UNITS 01-Nov-91 01-Nov-91 0
1258B1D265 BEG. FORCED EVAPORATION OF PONDS 02-Dec-91 02-Dec-91 0
1258B10933 ONSITE LAB OPERATIONAL 23-Dec-91 20-Dec-91 0
1258B10290 COMPLETE FORCED EVAPORATION OF PONDS 20-May-92 20-May-92 0
1258B10295 PONDS ENHANCED TO PROPER LEVEL 20-May-92 20-May-92 0
1258B10500 BEGIN PROCESS START-UP/TESTING 21-May-92 21-May-92 0
1258B10896 READY TO PROCESS POND SLUDGE 21-May-92 21-May-92 0
1258B10946 BEGIN WASTE SHIPPING TO NTS 26-Jun-92 26-Jun-92 0
1258B10911 READY TO PROCESS SALTCRETE 17-Jul-92 17-Jul-92 0
1258B10937 POND SLUDGE PROCESSING COMPLETE 03-Aug-92 03-Aug-92 0
1990
1991
1992
1993
Jul
Oct
Jan
Apr
TIMENOW: 12-Jun-91
PROGRESS
ACTIVITY_BAR
FILE NAME: OPS_BAR1
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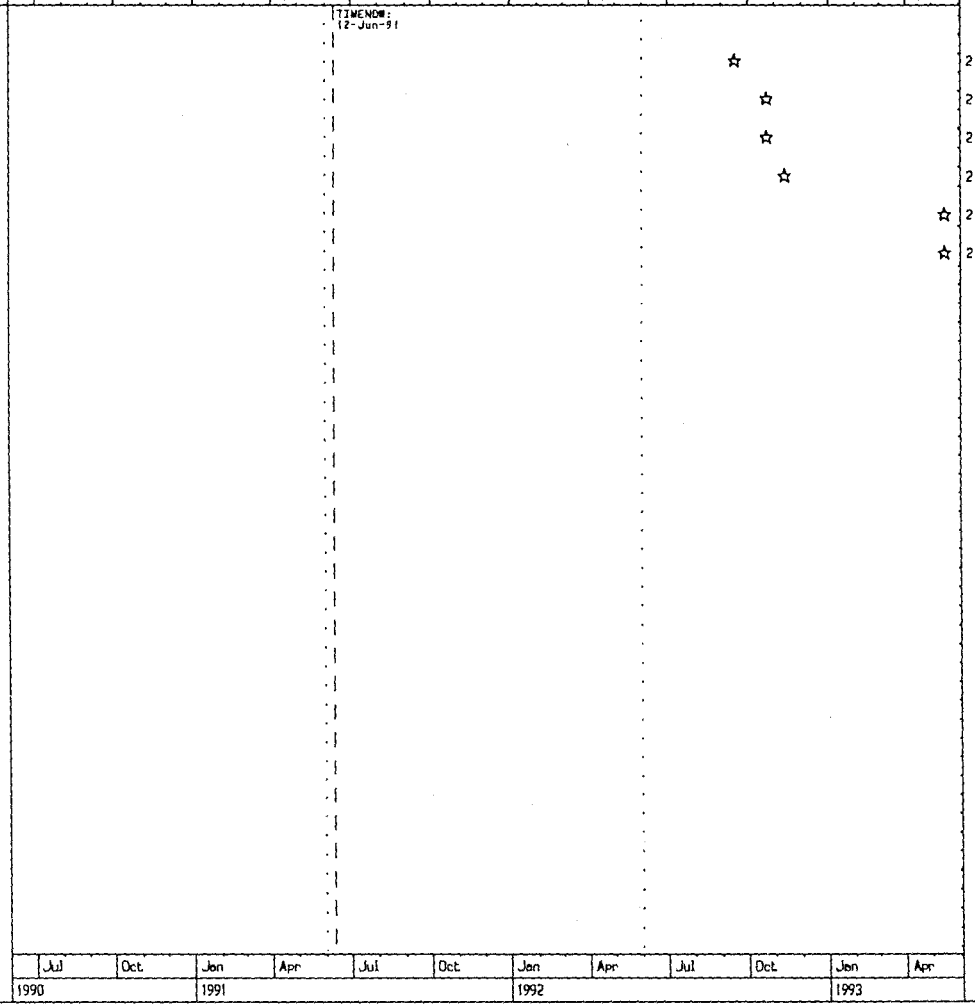
Figure 14
(cont.)

Rocky Flats Plant

SOLAR POND CLEAN OUT (AIP PROJECT) - KEY MILESTONES

	ACT. NUM	ACTIVITY DESCRIPTION	EARLY START	EARLY FINISH	CURRENT DURATION
24	1258B10941	PONDCRETE PROCESSING COMPLETE	16-Sep-92	16-Sep-92	0
25	1258B10773	SALTCRETE PROCESSING COMPLETE	23-Oct-92	23-Oct-92	0
26	1258B10944	WASTE PROCESING COMPLETE	23-Oct-92	23-Oct-92	0
27	1258B10560	BEGIN SHIPMENT OF SOLIDIFIED PONDCRETE/SALTCRETE TO NTS	13-Nov-92	13-Nov-92	0
28	1258B10570	AIP PONDCRETE COMPLETE	16-May-93	16-May-93	0
29	1258B10779	WASTE SHIPPING TO NTS COMPLETE	16-May-93	16-May-93	0



PROGRESS

ACTIVITY_BAR

FILE NAME: OPS_BAR1

1258B1

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Figure 15

RESOURCE CHART (1)

Project Phase	FY91	FY92	FY93	TOTAL
		Dollars x 1000		
Water Management				
- Enhanced Natural Evaporation				
• Floating Spray Aerators	213	--	--	213
• Heater/Soaker Pipes	515	--	--	515
• Electrical Repair/Upgrades	146	--	--	146
			Subtotal =	874
- Forced Evaporation				
• Evaporators	5200	--	--	5200
• Modular Surge Tanks	1600	--	--	1600
• Labor	--	3009	3145	6154
			Subtotal =	12954
Sludge Management				
- Solar Pond Sludge				
• Analysis/Characterization	415	--	--	415
• HET Subcontract	6837	5707(2)	--	12459
• Operations/Support	--	5622(3)	2609(3)	8231
• E/WM Support	354	531(2)	--	885
• Plant Support (FE, QA,H&S, etc.)	444	1620(2)	--	2064
			Subtotal =	24054

Figure 15 (cont)

		Dollars x 1000			
		FY91	FY92	FY93	TOTAL
-	Pondcrete Remix				
	• Analysis/Characterization	215	--	--	215
	• Shelter Repairs	790	--	--	790
	• HET Subcontract	--	5707(2)	--	5707
	• RCRA Inspections	816	3319	2167	6302
	• Operations/Support	11385	5623(3)	2608(3)	19616
	• E/WM Support	--	531(2)	278	809
	• Plant Support (FE, QA, H&S, etc.)	--	1620(2)	1110	2730
				Subtotal =	36169
-	Saltcrete Remix				
	• HET Subcontract	2277	2472	--	4749
	• RCRA Inspections	263	1106	722	2091
	• Operations/Support	3654	3748	1739	9141
	• E/WM Support	--	--	92	92
	• Plant Support (FE, QA, H&S, etc.)	--	--	370	370
				Subtotal =	16443

Figure 15 (cont)

-	Pondcrete Shipping/Disposal	--	3285	14714	18000
-	Saltcrete Shipping/Disposal	--	--	9200	9200

Grand Total = 117694

(1) All labor costs (EG&G) are burdened costs at $171,000/manyear for FY91; $177,000/manyear for FY92, and $185,000/manyear for FY93.

(2) HET Subcontract cost and E/WM and plant support costs for Pondcrete/Solar Pond Sludge for FY92 are allocated as 50% for pond sludge solidification and 50% for pondcrete remix.

(3) Operations Support costs for pondcrete/solar pond sludge for FY92 and FY93 are allocated as 50% for pond sludge solidification and 50% for pondcrete remix.